Xcel Energy®

August 17, 2009

Ms. Patti Krause
Community Involvement Coordinator
EPA Region 5 (mail code SI-7J)
77 W. Jackson Blvd.
Chicago, IL 60604-3590

Re: Comments on EPA Proposed Plan for Ashland/Northern States Power Lakefront Site

Dear Ms. Krause:

Northern States Power Company, a Wisconsin Corporation, d/b/a Xcel Energy (NSPW) appreciates the opportunity to provide the United States Environmental Protection Agency, Region V ("EPA") its comments on the June 2009 Proposed Remedial Action Plan (PRAP) for the Ashland/NSP Lakefront Superfund Site ("Site"). NSPW has been working cooperatively with EPA, the Wisconsin Department of Natural Resources ("WDNR"), and the City of Ashland ("City") since 1995 to address Site contamination. In particular, NSPW has undertaken the following actions to date:

- Conducted comprehensive environmental studies since 1995, culminating in the Remedial Investigation/Feasibility Study ("RI/FS") and accompanying human health and ecological risk assessments for the entire Site;
- Performed several Interim Remedial Measures, which ensure protection of human health and the environment at the Site, including the removal of a tar well from the former MGP Site, installing and operating a NAPL and groundwater extraction system for the Copper Falls Aquifer, removing NAPL-impacted soil and installing/operating a NAPL extraction system at the former ravine's mouth;
- Reimbursed EPA and WDNR for oversight and response costs; and,
- Entered into a Framework Agreement in 2008 with the City and WDNR to advance mutual goals at the Site in a cooperative manner, such as:
    - Ensuring a cleanup that is protective of human health and the environment

- Starting remedial activities in an expeditious manner and in tandem with the federal regulatory process;
- Enhancing public awareness of and support for the project;
- Managing the sequencing of remedial and City redevelopment activities;
- Leveraging available grants and other funding sources for the City;
- Ensuring that the remediation is done in a technically feasible and cost-effective manner consistent with EPA and WDNR regulations; and
- Supporting the City's Waterfront Development Plan so as to promote a strong, sustainable local economy.

As a regulated and responsible public utility, NSPW has a duty to its ratepayers and the community at large to promote the selection of a remedy for the Site that is scientifically sound, environmentally protective, safe, prudent and cost-effective. It is our view, however, that the remedy proposed by EPA in the PRAP does not meet these goals and is noncompliant with the National Contingency Plan (NCP), EPA Guidance and the criteria for remedy selection in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Moreover, the PRAP lacks the detailed analysis required to support the remedy proposed by EPA. The PRAP also improperly defers several critical remedy selection issues to the remedial design stage in direct conflict with the process recommended by the Agency's own National Remedy Review Board (NRRB), and appears to have generally been rushed through.

In contrast, a more appropriate remedial alternative has been presented to EPA in the RI/FS and should be selected for the Site, along with relevant dredging Performance Standards. In particular, it is NSPW's view that:

- If EPA determines that sediments should be removed from the Bay (although Site data, proper scientific procedures, published literature, and other information indicate that removal is not appropriate), then such sediments should be removed via a conventional wet-dredging technique, not an experimental "dry" excavation approach, and dredging Performance Standards must be defined in advance for the remedial approach to be successful; and

- The groundwater at the site should be remediated through a combination of actions, including source removal, in-situ treatment (via oxidant injection), and through the use of a permeable reactive barrier wall, rather than through sole reliance on a long-term and ill-fated pump and treat system.

Based on NSPW's detailed review of the PRAP and knowledge of the RI/FS and associated risk assessment documents, it is our view that the remedy proposed by EPA in the PRAP is fatally flawed and it would therefore be scientifically unreasonable, and arbitrary and capricious for EPA to select the proposed remedy in the Record of Decision (ROD).

NSPW's detailed comments to the PRAP and its deficiencies are attached (see Attachment A), along with a description of the remedial alternative we believe should instead be selected by EPA in the ROD. NSPW also adopts and incorporates by this reference those comments submitted by

Burns & McDonnell, DCI Environmental, and Sevenson (the "Burns Team") that specifically address the concerns and potential problems associated with the proposed implementation of a "dry" excavation sediment remedy as compared with hydraulic or wet dredging. Moreover, NSPW believes that the framework proposed by the Burns Team for a pilot test of wet dredging at the Site merits further consideration after establishment of realistic, science-based Performance Standards.

In summary, NSPW's detailed comments (Attachment A) explain:

1. EPA has not conducted the detailed analysis required by the NCP and CERCLA in proposing the remedy presented in the PRAP.

The PRAP does not provide a detailed discussion or analysis of some of the critical elements of the NCP and CERCLA remedy selection process, especially given the significant scope and costs (on the order of $80 million) of the remedy. For example, the PRAP does not provide a detailed explanation of how each of the alternatives was assessed using the remedy selection criteria. All Applicable Relevant and Appropriate Requirements (ARARs) are not identified, there is no discussion of To Be Considered (TBCs), and the remedial action objectives (RAOs) are extremely general and lack the required specificity. There is no discussion of the process that will be used for selecting contingent remedy options, no definition of the remedy implementation duration, and no detailed analysis of the risks to worker safety, community impacts, or remedy implementability – all critical and required elements of the remedy selection process. The lack of information and analysis presented in the PRAP is especially problematic given that it prevents the public from having an opportunity to effectively review, evaluate, and comment on the proposed remedy. In addition, EPA in many instances has completely ignored and/or summarily dismissed the recommendations of the National Remedy Review Board (NRRB), further confirming that the proposed remedy does not comply with either CERCLA or the NCP.

2. EPA has not presented a clear and/or scientifically defensible rationale for sediment remediation.

Although not clearly stated, EPA's rationale for sediment remediation appears to be that: (1) shallow (or surficial sediments, typically the top 6 inches) pose an unacceptable risk to benthic (*i.e.*, sediment dwelling) organisms; (2) hypothetical risks to human health associated with surface water sheens are unacceptable; and, (3) NAPLs present in deep sediments are a Principal Threat waste. The PRAP utilizes a sediment preliminary remediation goal (PRG) for total polynuclear aromatic hydrocarbons (tPAHs), aimed at protection of sediment dwelling benthic organisms, as the basis for the proposed sediment remediation.

Overall, the sediment-related risks to human health and ecological receptors are hypothetical, not founded in sound-science, and are highly uncertain (acknowledged in PRAP, p. 7 and 8). For example, the human health risk associated with sheen concentrations utilized unrealistic exposure assumptions and concentrations (PRAP, p. 7). Use of more realistic exposure assumptions indicates that potential human health risks posed by sheens are insignificant. Regarding the issue of Principal Threat waste, NAPLs present in deep sediments are immobile

(buried by shallow sediments and the overlying water column – which has resulted in NAPLs being confined to a limited area of the Bay for decades) and pose insignificant risks to human health and the environment.

The sediment PRG for tPAHs is being misapplied, and proper application of the PRG indicates that surficial sediments in the Bay pose insignificant risks to benthic invertebrates because:

- Although the sediment PRG was derived as a function of sediment organic carbon content, the PRG as applied ignores the OC contents of sediments in the Bay and assumes that all sediments consist of low OC sands; and,
- The PRG is being applied to all sediments regardless of depth, even though it should only apply to surficial sediments (the top 6 inches) where benthic organisms actually reside.

This conclusion of insignificant risks to benthic organisms was confirmed by field surveys that found a thriving benthic community in sediments – further reinforcing the unreasonable nature of the proposed sediment PRG.

3. The sediment remedy selected by EPA is unsafe, unproven, potentially cannot be implemented, could result in negative environmental impacts, and is not cost-effective.

The "dry" dredging sediment remedial alternative selected by EPA poses significant risks to worker safety, the environment and the community , has significant implementability issues, is going to take approximately 1 to 2 years longer to implement (than the wet dredge alternative), and is not cost-effective. Although a proper assessment of risks indicates that removal of the sediments is unnecessary, in the event sediment removal is deemed necessary, the wet dredging sediment alternative is greatly superior to the dry dredge alternative and is fully compliant with NCP sediment selection criteria, unlike the dry dredge alternative.

The key safety issues associated with the dry dredging remedial alternative are attributable to the Site's setting (*i.e.*, on a Great Lake) and the large scope of the sediment dredging specified by EPA (on the order of 130,000 yd^3). In order to implement the dry dredging remedial alternative, a retaining structure of significant size and strength has to be constructed to dewater and expose the sediments that need to be dredged. This is an extremely unsafe, multi-year proposition given the potential loading on the retaining structure from ice and other Lake Superior-related forces. In addition, dewatering of the Bay may breach the underlying aquitard, resulting in significant inflow of underlying "artesian" groundwater (referred to as "basal heave") and causing potentially catastrophic failure of the retaining structure. Such catastrophic failure could result in significant loss of life and the mobilization of affected sediments into the relatively pristine portions of Lake Superior, causing greater environmental impacts.

The dry dredging approach will also require1 to 2 years longer to implement (as compared to wet dredging), resulting in increased risks to worker safety and negative impacts to the community.

Although EPA did not conduct a rigorous comparative evaluation of short term risks associated with the implementation of dry *vs.* wet dredging, NSPW's evaluation indicates that the dry dredge remediation alternative selected by EPA poses a 23% greater risk of worker injury/fatality (not accounting for risk from catastrophic failure due to basal heave). NSPW's evaluation also indicates that implementation of the dry dredging sediment remediation alternative will result in a larger ambient air "plume" of hazardous pollutants (*e.g.*, benzene) and of malodorous gases (*e.g.*, naphthalene), potentially exposing community members to these pollutants.[1]

The use of dry sediment remediation for a project of such size and setting is unprecedented. Typically, dry dredging is utilized in small streams and river settings, where the water can be readily diverted/controlled to conduct the sediment removal. The scale and safety issues discussed above are serious impediments that severely undermine the project's implementability.

Finally, based on the best information available to us to date, it appears that the dry sediment dredging alternative will cost between $18 million to $38 million more than the wet dredging alternative. Given that the wet dredging alternative meets the NCP/CERCLA threshold criteria for remedy selection and costs significantly less than dry dredging, the selection of dry dredging as the preferred alternative is arbitrary and capricious and inconsistent with the NCP and CERCLA.

4. The groundwater RAOs are not clearly defined and the groundwater remediation alternatives selected by EPA are inappropriate.

EPA has not clearly defined the groundwater RAOs. In the PRAP, EPA states that the purpose of the groundwater cleanup alternative "is hydraulic containment within the waste management area and restoration of the aquifer outside the waste management area" (p. 26). However, EPA's objectives are not clear or appropriate because:

- No definition of the "waste management area" is provided, hence the extent of the "containment" and "restoration" areas is unknown,
- Aquifer restoration, *i.e.*, groundwater remediation to meet drinking water standards or Maximum Contaminant Levels (MCLs), is unrealistic and unnecessary (experience at hundreds of sites across the nation indicates that the aquifer restoration goal is unattainable at most DNAPL sites, and, given the future expected uses of the aquifer, is also unnecessary); and,
- The ROD should include a provision to allow the use of monitored natural attenuation (MNA) in lieu of active hydraulic containment, once source concentrations have adequately attenuated because MNA is the cost effective and appropriate remedy at sites such as Ashland where the plume is stagnated and no future uses of the aquifer will occur.

[1] Note that odors are expected to be less of an issue in the wet dredge alternative because presence of the water column and high water content in the sediment minimizes odor generation, dredge rates can be controlled, and odor from excavated sediment can be minimized using spring structures. Odor control is much more difficult in the dry dredge scenario because a large area is exposed making emission controls challenging.

The EPA selected groundwater remediation alternatives for both the former MGP facility (Copper Falls Aquifer) and Kreher Park rely on active pump and treat (P&T) systems in conjunction with chemical oxidation and horizontal/vertical barriers. EPA's undue reliance on P&T systems runs counter to the abundant technical literature and recent EPA guidance clearly illustrating that such systems are ineffective at NAPL sites.

At the former MGP facility, EPA has recommended addition of a dozen P&T wells, without even conducting an analysis of the anticipated operational duration of such a system – a critical variable for P&T costs. NSPW recommends that the remedial alternative for the MGP facility should focus on source removal (using oxidant injection) rather than expansion of the P&T system (alternative GW-9B).

At Kreher Park, NSPW believes that the use of a permeable reactive barrier (PRB) wall (along the western edge of the Park) in lieu of groundwater P&T will result in a remedy that will be protective of public health and the environment, cost-effective, and better for the community. Use of a PRB wall instead of a P&T system will eliminate the need for an above ground water treatment system at the Lakefront and will also result in fewer property redevelopment restrictions – critical elements for the effective renewal of the Lakefront area. In addition, use of a PRB is much more cost-effective than P&T for achieving hydraulic containment.

5. Performance Standards and clear criteria for selecting contingent remedial options need to be defined in the ROD.

As recommended by the NRRB, clear, realistic, science-based Performance Standards need to be defined in the ROD and not left to the Remedial Design (RD). The PRGs defined as part of the RI/FS process are a starting point that need to be translated into practicable targets that can be met during remedy implementation. For example, the PRGs are risk-based values that need to be met on average over an applicable exposure or averaging area – a procedure that should be specified in the ROD. In addition, for sediment, there is scientific consensus based on experience at hundreds of contaminated sediment sites that dredging is not 100% effective and post-dredging residuals are unavoidable. As such, use of a post-dredge cover or habitat restoration material is an integral and key component of Performance Standard development. Therefore, the post-dredge Performance Standards must be clearly defined as part of the ROD so that an appropriate remedy implementation approach can be developed as part of the RD.

The PRAP also does not provide clear guidance on the process to be used for selecting contingent remedial options or for addressing other unresolved questions that have major implications on remedy implementation. For example, the PRAP does not specify the criteria to be used to select the oxidant for in-situ chemical oxidation, or the metrics to be used for determining whether on-site sediment thermal treatment can be utilized. Given the significance of these unresolved issues on remedy implementation, the ROD should provide a clear framework, which will serve as the basis for how these decisions will be made during remedy implementation.

6. The ROD should allow for the conduct of pilot tests to collect data needed to optimize the remedial design.

The PRAP should anticipate and the ROD should make explicit the need for certain pilot tests as part of the RD. Pilot tests will be required for optimizing the sediment and groundwater remediation design and to test the Performance Standards that should be developed prior to and implemented via the ROD. The sediment pilot test will provide critical data needed for defining dredge operating parameters, minimizing mobilization of contaminants beyond the active dredge area, understanding the significance of dredge residuals/ resuspension and defining the thickness of the post-dredge cover material, *etc.* Groundwater remediation pilot tests will evaluate the effectiveness of various oxidants and collect data for developing an optimal design for a permeable reactive barrier.

7. The PRAP overstates the role of the MGP in causing the contamination observed at the Site and does not fully acknowledge the existence of other potentially responsible parties and the contribution from other sources.

The PRAP overstates the role of former MGP operations in causing the Ashland Site contamination, but does not fully acknowledge other significant sources of NAPLs and PAHs at the Ashland Site, such as wood-treating, rail road operations, and City releases. Eyewitness accounts, historical records, and environmental forensic data make it abundantly clear that other parties are CERCLA PRPs for the Site due to their role (*e.g.*, as owners or operators) and their contribution to Site contamination (*e.g.*, as arrangers for the disposal of hazardous substances). The ROD should appropriately describe the various sources of the contamination observed in Kreher Park and the Bay.

8. All prior NSPW submittals to EPA (and/or WDNR) are incorporated into the Administrative Record.

Much work has been done on the Site since 1995. This includes technical and other information formally submitted by NSPW to WDNR prior to the Site being listed on the National Priorities List. As such, please note that NSPW hereby incorporates into these comments and into the Administrative Record all prior submittals to EPA (and/or WDNR) related to the Site and expresses its intent to rely on those prior submittals, including but not limited to those documents listed in Attachment B.

Again, we appreciate the opportunity to comment on the proposed remedy as provided for in EPA's Proposed Plan (June 2009) and trust that, based on the information NSPW and others have provided, EPA will select a safe, scientifically-sound, implementable, and cost-effective remedy for the Site.

Sincerely,

Jerry C. Winslow

Principal Environmental Engineer

Attachments (2)

Attachment A

NSPW Comments on the EPA Proposed Remedial Action Plan (PRAP) (June 2009) Ashland/Northern States Power Lakefront Superfund Site Ashland, Wisconsin

August 17, 2009

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List of Abbreviations

ARARs	Applicable or Relevant and Appropriate Requirements
bss	below sediment surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COCs	Contaminants of Concern
DNAPL	Dense Non-Aqueous Phase Liquid
FS	Feasibility Study
EPA	Environmental Protection Agency
GMAV	Genus Mean Acute Value
IRM	Interim Remedial Measure
ISCO	*In Situ* Chemical Oxidation
LNAPL	Light Non-Aqueous Phase Liquid
MCL	Maximum Contaminant Level
MGP	Manufactured Gas Plant
NAPLs	Non-Aqueous Phase Liquids
NCP	National Contingency Plan
NRC	National Research Council
NRRB	National Remedy Review Board
NSPW	Northern States Power Company, A Wisconsin Corporation
OC	Organic Carbon
OU	Odor Unit
PAHs	Polycyclic Aromatic Hydrocarbons
PPE	Personal Protection Equipment
PRAP	Proposed Remedial Action Plan
PRB	Permeable Reactive Barrier
PRGs	Preliminary Remediation Goals
PRP	Potentially Responsible Party
RAL	Remedial Action Level
RAO	Remedial Action Objective
RBSCs	Risk-Based Screening Concentrations
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
ROD	Record of Decision
SITE	Superfund Innovative Technology Evaluation
SSL	Soil Screening Level
SWAC	Surface Weighted Average Concentrations
TOC	Total Organic Carbon
UCLM	Upper Confidence Limit for Mean
VOC	Volatile Organic Compound
WDNR	Wisconsin Department of Natural Resources
WWTP	Wastewater Treatment Plant

1 Introduction

Northern States Power Company, a Wisconsin Corporation, d/b/a Xcel Energy (NSPW), appreciates the opportunity to provide the United States Environmental Protection Agency (US EPA) Region V ("EPA") its comments concerning the June 2009 Proposed Remedial Action Plan (PRAP) for the Ashland/NSP Lakefront Superfund Site (Site). NSPW supports the appropriate risk based cleanup of contaminants in soil, groundwater, and sediments at the Site in a manner that is consistent with the National Contingency Plan (NCP), the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and EPA guidance.

CERCLA section 121 mandates that remedial actions selected by EPA must adhere to the following criteria (US EPA, 1990):

1. Protect human health and the environment;
2. Comply with applicable or relevant and appropriate requirements (ARARs) unless a waiver is justified;
3. Be cost-effective;
4. Utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and
5. Satisfy the preference for treatment as a principal element, or provide an explanation in the Record of Decision (ROD) of why the preference was not met.

For reasons outlined below, NSPW believes that the EPA-preferred remedy in the PRAP is arbitrary and capricious and inconsistent with the NCP, CERCLA and relevant EPA guidance. There are significant unresolved technical and safety issues with EPA's preferred remedy as presented in the PRAP. EPA has not adequately demonstrated the need for sediment remediation in the PRAP, but to the extent that any sediment remedy is required, , the remedy rationale must be clearly defined on the basis of actual (not perceived) risk, and a safe and proven remediation approach must be used (*i.e.*, wet, not dry, dredging). An alternative remedy, which is based on remedial alternatives described in the Feasibility Study (FS) (URS, 2008), is equally protective of human health and the environment as EPA's preferred alternative. The alternative remedy is superior to the EPA-selected preferred alternative because it can be completed in a more timely manner with less disruption to the local community, can be completed with

less risk to human health and safety and the environment during remediation, and is substantially more cost-effective.

NSPW believes that the alternative remedy approach described herein and outlined briefly below (Table 1.1) satisfies NCP and CERCLA requirements and is superior to the EPA-preferred alternative in the PRAP, when objectively evaluated using NCP statutory criteria.

Table 1.1
NSPW's NCP-Compliant Preferred Alternative

Medium	PRAP	NSPW Alternative	Comments
Sediments	Sed-6	Sed-4 (to the extent any sediment remedy is needed)	SED-6 is inferior to SED-4 for 3 balancing criteria (short-term effectiveness, implementability, and cost). EPA's sediment remediation rationale is inadequately defined. Performance Standards must be defined prior to issuing the ROD.
Soil	S-5A	S-5A	None
Shallow Groundwater	GW-2A	GW-5	GW-5 provides equal or superior effectiveness to GW-2A at a significantly lower cost.
	GW-3 or GW-6	GW-3 or GW-6	Oxidant efficacy should be evaluated in the pre-design phase.
Deep Groundwater (Copper Falls Aquifer)	GW-9B	GW-9A and GW-6	GW-9A and GW-6 provide equal or superior effectiveness to GW-9B at a lower cost.

NSPW respectfully requests that the above-summarized "NSPW Alternative" be selected in the ROD as the NCP-compliant remedy for the Site.

The PRAP also incorrectly implies that NSPW (through predecessor companies acquired by NSPW) is responsible for the majority, if not all, of the contamination found in soil, groundwater and sediments at the Site. However, based on information in the record, including but not limited to the Potentially Responsible Party (PRP) Investigation Report and addenda (NSPW, 2006, 2008) and chemical fingerprinting data (Newfields, 2006), and as further described herein, it is clear that other parties contributed substantially to the contamination observed at the Site. Consequently, the ROD should explicitly and fully acknowledge the contributions from other sources to Site contamination.

2 There are Technical Flaws in EPA's Sediment Remediation Rationale

EPA's sediment remediation rationale is not clearly defined in the PRAP, but appears to be the following:

- Shallow sediments exceeding the Preliminary Remediation Goal (PRG) for polycyclic aromatic hydrocarbons (PAHs) pose significant risks to benthic invertebrates.
- Surface water "sheens" derived from sediment non-aqueous phase liquid (NAPL) pose significant risks to human health.
- NAPLs in sediment are a "Principal Threat" as defined in the NCP – source materials – and hence need to be addressed.

As previously expressed to EPA, NSPW strongly believes that EPA should select a remedy that can be implemented in a safe and appropriate manner. However, there are several key technical flaws in EPA's sediment remediation rationale that should be addressed prior to finalizing remedy selection and issuing a ROD:

- As NSPW has indicated previously to EPA, the EPA-derived sediment PRG is highly uncertain and is being misapplied. Proper application of the PRG indicates that only shallow sediments in a small area may pose a risk to benthic invertebrates.
- Sheen surface water risks to humans are hypothetical, unrealistic, highly uncertain, and technically unjustifiable. More appropriate quantification of risks indicates that sporadic sheens that have been observed but never last long enough to be sampled are not expected to pose significant risk to human health.
- EPA has not demonstrated that NAPLs present in deep Chequamegon Bay sediments are a Principal Threat since they are neither highly toxic (based on the absence of demonstrated risk) nor mobile, and therefore the basis for their remediation has not been defined.

These technical flaws renders EPA's decision in the PRAP and anticipated ROD to be arbitrary, capricious and without sufficient scientific technical support.

2.1 The EPA-Derived Sediment PRG is Highly Uncertain and is Being Misapplied

As stated in the PRAP, the overall goal for sediments at the Site was determined to be "protection of the survival, growth, and reproduction of benthic invertebrate communities" (US EPA, 2009). PAHs in sediment were assessed to be the most significant contributor of potential risk to benthic organisms, and a PAH threshold concentration for adverse effects was calculated to establish a PRG. The Baseline Ecological Risk Assessment (URS, 2007a) found no significant risks to other aquatic, avian, or upland species related to contaminants in sediments or soil at the Site.

As described in the Remedial Action Objectives (RAO) Technical Memorandum, US EPA (2007) derived the PRG for total PAHs in sediment.[1] Substantial data have been gathered to characterize potential risks associated with sediment exposure at the Site. However, as described below, significant technical issues remain with EPA's proposed sediment PRG of 2,295 µg PAH/g organic carbon (OC) (9.5 µg PAH/g dwt at 0.415% OC), and how to apply it appropriately for remediation.

Ultimately, the sediment PRG value was derived at the Site based on a small subset of data and is driven by a single "sandy" sediment midge toxicity test (SEH, 2002), two sandy sediment locations (SQT 1 and 7, located adjacent to one another), and a single, water-only (not sediment) fluoranthene toxicity study cited from the technical literature (Schuler *et al.*, 2004). Given that several site-specific toxicity tests have been performed with both *Chironomus* and *Hyalella* (in 1998, 2001, and 2005-2006) using sediment collected from more than 10 locations at the Site (both "woody" and "sandy"), and given the many other published PAH toxicity studies that EPA could have relied upon, at best, the PRG is not sufficiently reflective of available data (both Site and literature data) and, at worst, the PRG is woefully flawed by relying on incorrect assumptions.[2]

2.1.1 The PRG Does Not Adequately Reflect Site Conditions

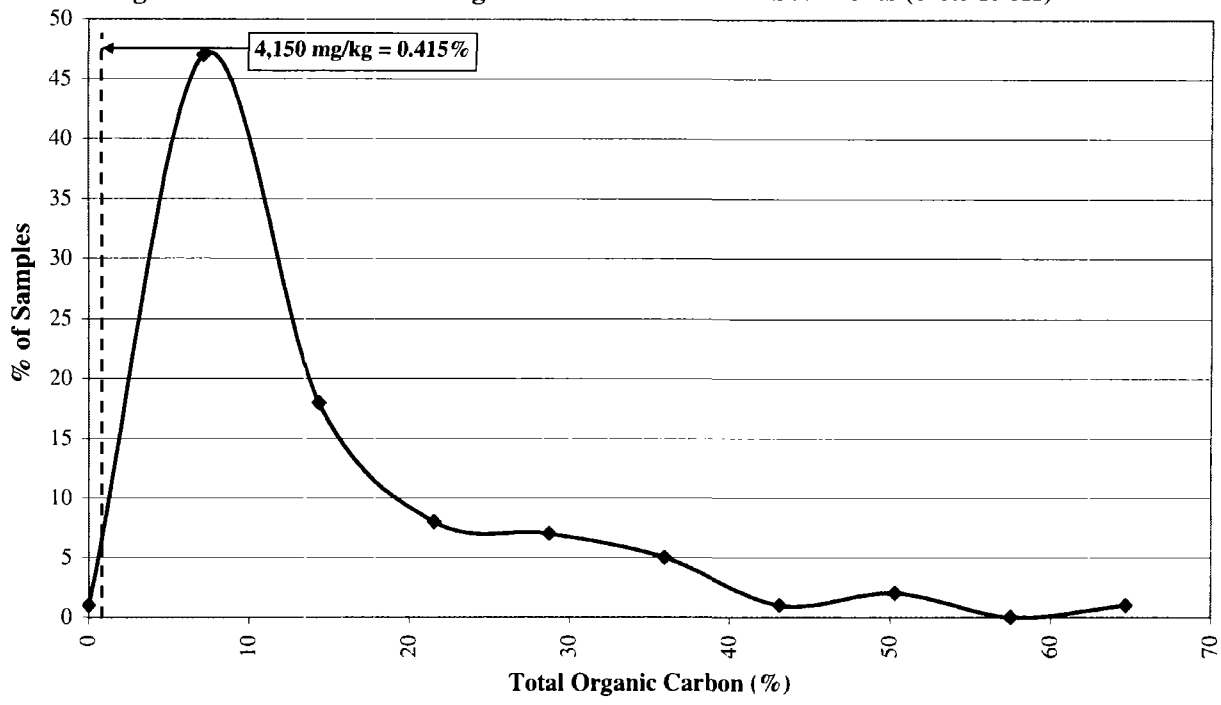
The PRG is based on results of toxicity tests using low OC "sandy" sediments, which is inappropriate for the majority of the sediments at the Site. As documented in the FS Report (URS, 2008a), 95% of the impacted sediments are covered by a wood debris layer that is up to 7 feet thick in

[1] US EPA's RAO Technical Memorandum is contained in Appendix A to the RI Report (URS, 2007a).
[2] For instance, the assumption that midge is the most sensitive benthic receptor such that only midge toxicity data should be used to derive the PRG, is unsupported as further explained in Section 2.1.2.

areas, with an average thickness of 9 inches. These high OC "woody" sediments reduce PAH bioavailability and did not show significant toxicity to benthic organisms during actual toxicity testing (SEH, 2002; URS, 2007a), demonstrating the inappropriateness of applying a sandy sediment derived PRG to the entire Site. In addition, the PRG does not account for "background" sediment toxicity observed in sandy sediments in reference area sampling, *i.e.*, toxicity associated with constituents unrelated to the Site. Such unaccounted for "background" toxicity is also contributing to an unrealistically low and scientifically unsound PRG value.

Since the sediment portion of the Site is almost entirely covered by woody debris, the OC content for sandy sediments that were used to establish the PRG is not representative of typical Site sediments to which benthic invertebrates would be exposed. As shown in Figure 2.1, the OC concentration in sediments sampled at the Site range from less than 0.4 to over 40%. The OC concentration used to develop the PRG (0.415%; *i.e.*, mean of OC content in SQT1 and SQT7) represents less than the 10^{th} percentile of the distribution and is clearly not representative of site conditions. Furthermore, site-specific sediment toxicity testing demonstrated that woody sediments with a higher OC content (*i.e.*, more representative of Site conditions) are not toxic to benthic organisms (URS, 2007a; SEH, 2002). Finally, even though the results of the benthic survey were deemed inconclusive by EPA, the survey clearly demonstrated that severe impacts to the benthic community were not observed at the Site, contrary to what would be predicted on the basis of the proposed PRG.

Figure 2.1. Distribution of Organic Carbon in Surface Sediments (0-0.5 ft bss)



Note: Data from Appendix J to Remedial Investigation (RI) Report

2.1.2 The PRG Derivation from the Toxicity Studies was not Based on Proven Methods or Sound Science

The PRG was based on a small subset of site-specific toxicity data and derived using a series of assumptions and extrapolations:

- *Chironomus* is more sensitive than *Hyalella*;
- Extrapolation across species (from *Chironomus* to *Hyalella*);
- Extrapolation across environmental media (from water-only to sediment);
- Extrapolation within a chemical class (from fluoranthene to total PAHs); and
- Extrapolation between toxicity endpoints (*e.g.*, from LC50 to LC20, from 10-d to 28-d).

The PRG presented in EPA's RAO Technical Memorandum (US EPA, 2007) significantly overestimates potential risks to benthics at the Site by using assumptions and applying extrapolations that

are not sufficiently supported by the technical literature and, in some cases, are incorrect. No technical literature or precedence is cited to demonstrate the overall validity of EPA's approach.[3]

For instance, EPA assumed that *Chironomus* was more sensitive than *Hyalella* based on results of one successful sediment toxicity test at the Site (SEH, 2001) and one literature-derived study (Schuler *et al.*, 2004). However, an EPA review of the scientific literature on genus-specific toxicity data for PAH mixtures shows that *Chironomus* is substantially (*i.e.*, at least fivefold) less sensitive to PAHs than *Hyalella* (US EPA, 2003b).[4] Additional extrapolation factors (*e.g.*, from LC80 to LC50, from LC50 to LC20) are used in the threshold calculations without citing precedent for such an extrapolation in the technical literature. The adoption of these multiplicative extrapolations to derive the sediment PRG relies heavily on value judgments that are neither further explained nor supported by literature citations or precedent at other sites.

2.1.3 The PRG Should Reflect Current Understanding of PAH-Associated Toxicity to Benthic Invertebrates at MGP Sites

In EPA's derivation of the PRG, PAH-related bioavailability (and toxicity) to benthic invertebrates at the Site was assumed to follow a simple two-phase model consisting of water and particulate organic carbon.[5] The current understanding of PAH bioavailability in sediments has greatly evolved over the last four decades, and relies more appropriately on sophisticated three- and four-phase models that include the additional interaction of PAHs with colloidal organic carbon, soot or black carbon, and NAPL (*e.g.*, US EPA, 2003a and references therein; Burgess and Lohmann, 2004). While the interaction of PAHs with these additional fractions is still not fully understood, field studies have demonstrated that multi-phase partitioning models confirm the greater retention (lower bioavailability) of PAHs sorbed to multiple sources of carbon. For example, a study by Lamoureux and Brownawell (2004) demonstrated that both naphthalene and benzo[a]pyrene desorption rates for soot and soot-amended sediments were reduced by at least a factor of two relative to unamended sediment (*e.g.*, native OC only), resulting in significantly lower bioavailability to the polychaete *Nereis succinea*.[6]

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[3] The Schuler *et al.* study that is cited only provides a source of fluoranthene toxicity data but does not provide support for the approach taken.

[4] The genus mean acute value (GMAV) for *Chironomus* is > 68.4 µmol/g OC, whereas the GMAV for *Hyalella* is 13.9 µmol/g OC (US EPA, 1997).

[5] Mount, DR. 2007. "Discussion of PAH toxicity threshold for Ashland Site sediments." March 26.

[6] Reduction in the assimilation efficiency of benzo[a]pyrene in the presence of soot and soot-amended sediment were 58% and 29%, respectively (US EPA, 2007).

Field data from manufactured gas plant (MGP) sites where multiple carbon fractions are typically present also have demonstrated that the original two-phase model overestimates PAH concentrations in pore water and therefore is a poor predictor of potential toxicity to benthic organisms at these sites. For instance, Kreitinger *et al.* (2007) recently measured the toxicity of 34 sediment samples collected from four MGP sites ranging in total PAH-16 (sum of 16 EPA priority pollutant PAHs) concentrations from 4 to 5,700 mg/kg, TOC content from 0.6 to 11%, and soot carbon from 0.2 to 5.1%. The survival and growth of *Hyalella azteca* in 28-d bioassays were unrelated to total PAH concentration, with 100% survival in one sediment sample containing 1,730 mg/kg total PAH-16. Twenty-five of the 34 sediment samples exceeded the probable effects concentration screening value of 22.8 mg/kg total PAH-13 (sum of 13 PAHs) and equilibrium partitioning sediment benchmarks for PAH mixtures.[7] Yet 19 (76%) of the 25 samples predicted to be toxic were not toxic to *Hyalella azteca* (Kreitinger *et al.*, 2007).

A forensic study performed on Site sediments by NewFields (2006) found that soot concentrations in 15 sediment samples ranged from non-detect to 12.5% and TOC concentrations ranged from non-detect to 14%, and were therefore at least as high as in the Kreitinger *et al.* (2007) study. Therefore, PAH bioavailability (and toxicity) in the majority of Site sediments is expected to be significantly reduced due to the presence of soot as an OC component. Again, this is confirmed by the absence of toxicity in woody sediments (bioassay data) and the apparent absence of community-level impacts to benthics (benthic survey).

2.1.4 The PRG Should Be Applied on an OC-Normalized Basis to Shallow Sediments

EPA's benthic-risk derived PRG should be applied in accordance with the sediment remediation goal that was set for the Site, *i.e.*, "protection of the survival, growth, and reproduction of benthic invertebrate communities" (US EPA, 2009). Specifically, the sediment PRG should: 1) only pertain to the biologically active zone where benthic invertebrates can be exposed (*i.e.*, up to 6 inches in depth); and 2) be implemented as an OC-based value consistent with known mechanisms of PAH toxicity to benthic invertebrates. As discussed in Section 3, PRGs should not be considered remediation targets.

Most sediment-associated organisms are exposed only to surface sediment (*i.e.*, the top 6 inches), rather than deep sediment. For example, the burrowing depth of sediment-dwelling insects and oligochaetes vary greatly among taxa and seasons, but seldom exceed 4 inches (Lazim *et al.*, 1989;

[7] Benchmarks for "PAH mixtures" were based on the measurement of 18 parent PAHs and 16 groups of alkylated PAHs (PAH34).

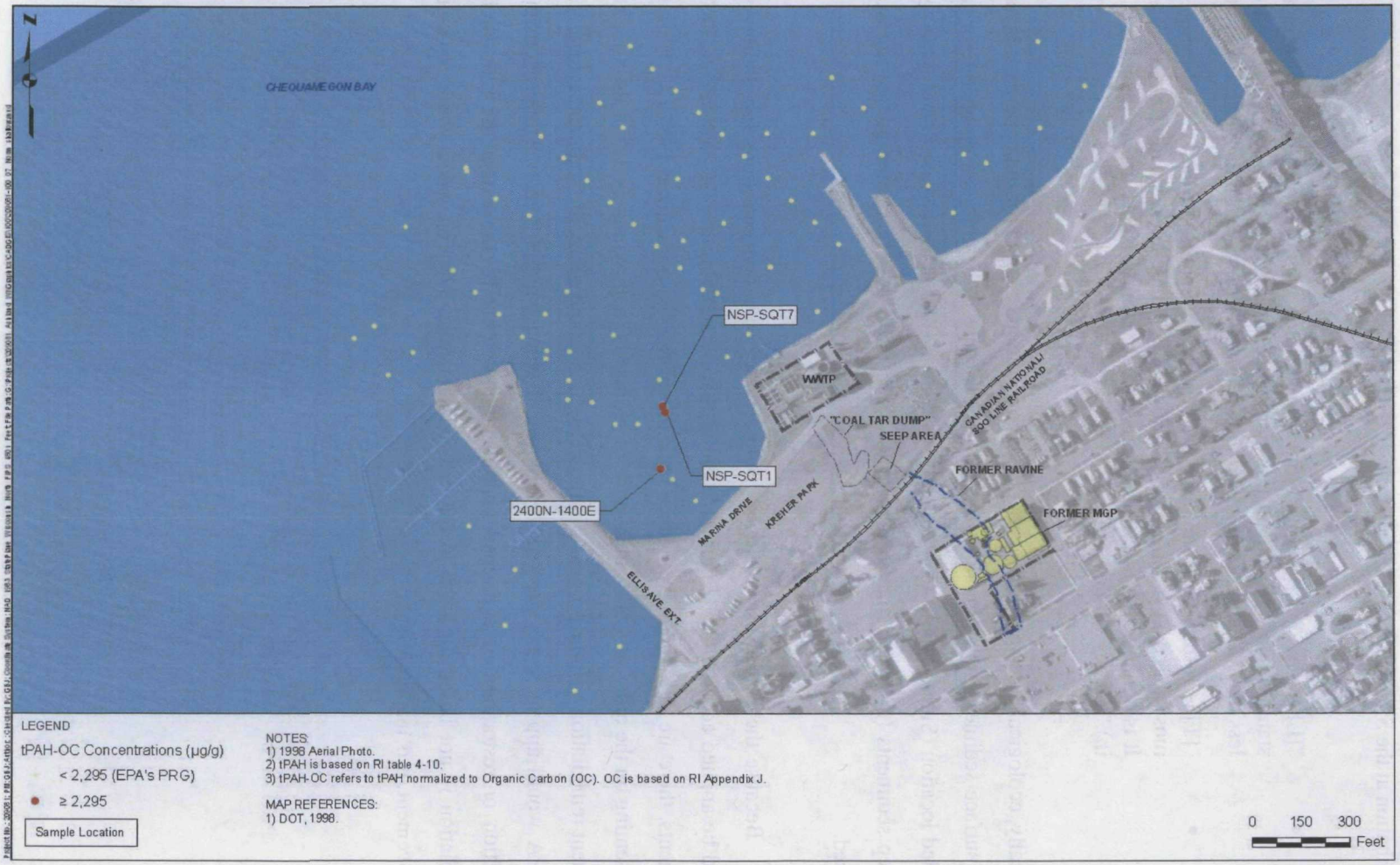
Charbonneau and Hare, 1998, as cited in Suter, 2006). This is consistent with field findings of bioturbation at the Site (URS, 2008b):

- "[L]ittle evidence of any bioturbation which would be sufficient to influence sediment stability and contaminant transport at the site...worm tubes were observed to a depth of less than 0.5 cm (0.2 in). No bioturbation was observed in the vertically stratified cores."
- "[T]he results from sampling the benthic community in the site sediments...indicate the most abundant organisms are chironomids, oligochetes, small crustaceans and mollusks. It is unlikely that these organisms are active bioturbators deeper than 4 to 5 cm (1.5 to 2 in)." (pages 5-5 thru 5-6)

Typically, ecological assessors assume that the concentration reported for the uppermost layer of a core or for a surface sediment grab sample represents the exposure of benthic and epibenthic organisms at the sampled location (Suter, 2006). Consequently, it is technically inappropriate to apply the sediment PRG to deep sediments (*i.e.*, more than 6 inches) to which the benthic communities are not expected to be exposed.

Because the PRG was developed using sediment OC concentrations for shallow sediments, it should be applied accordingly. Figure 2.2 shows that by applying the OC-normalized PRG to shallow sediments, there are only three exceedance locations of the OC-normalized PRG (2,295 µg PAH/g OC), representing on the order of 4,500 cubic yards of sediments (approximately 3% of the 133,000 cubic yard sediment remediation volume proposed in the PRAP). Without more, the sediment remediation proposed by EPA would appear to be targeted at removal of wood waste for marina improvement rather than protection or restoration of a harmed benthic community. To the extent the rational for sediment remediation is not based on harm to the environment, but rather on wood waste removal for harbor improvement, it is inappropriate.

Figure 2.2. tPAH Concentrations in Shallow Sediment Normalized to TOC



2.2 Sediments and Surface Water Do Not Pose a Risk to Human Health

As reflected in the findings of the Human Health Risk Assessment (HHRA), based upon Chequamegon Bay data there are no unacceptable human health risks to either a swimmer or wader from exposure to sediments or surface water. At the request of Wisconsin Department of Natural Resources (WDNR), hypothetical human health risks posed by routine exposure to sporadic, uncharacterized "sheens" of an undefined nature and undefined source were calculated and presented in the PRAP and HHRA. These hypothetical human health risks associated with routinely contacting such sheens are unrealistic, technically unjustifiable, and not based on *any* sheen data. However, it appears that the perception that the sporadic sheens are derived from NAPL in buried sediments is influencing the selection of deep sediment dredging.

More appropriate quantification of risks (presented below) indicates that sheens are not expected to pose significant risk to human health, although there is still uncertainty because the appearance of a sheen has been so sporadic that it has never been successfully sampled. . It is inappropriate to base a multi-million dollar remedy decision on no actual sheen data and only hypothetical risks.

At the request of WDNR, NSPW evaluated risks for an adult and adolescent swimmer and wader exposed to chemicals of concern (COCs) in the sheen. In the absence of sheen chemical concentration data, hypothetical human health risks were calculated using two different estimates of the COC concentrations:

1. Using chemical concentrations from a dense non-aqueous phase liquid (DNAPL) sample collected from the deep Copper Falls aquifer; and
2. Using pure phase water solubility concentrations.

Neither method is an adequate substitute for sheen sampling data. As the HHRA correctly concluded (pp. 3, 6.7), the risks calculated for potential exposure to the sheen are highly uncertain, likely overestimated, "and should not be used as the basis for deriving remedial action objectives." The PRAP also recognizes that "there is uncertainty associated with estimating risks to...oil slicks in surface water" (US EPA, 2009, p. 7).

As described below, there are at least two significant flaws in the hypothetical sheen risk calculations that render the resulting risk estimates unusable for risk management decisions:

1. The estimation of COC concentrations is unreliable; and
2. The assumption of routine exposure to the sheens at the same frequency as the baseline risks for a swimmer/wader is inconsistent with the sporadic occurrence of the sheens.

2.2.1 Sheen Chemical Concentration Estimates in Surface Water are Unreliable

The COC concentrations used in the risk calculations are likely to substantially overestimate potential health risks. Use of the COC concentrations measured in DNAPL as the COC concentration in the sheen is inappropriate because a surface water Light Non-Aqueous Phase Liquid (LNAPL) sheen is chemically distinct from a DNAPL tar, and it is unknown whether this sheen is tar-derived. Use of pure phase water solubility is similarly not appropriate because it ignores chemical mixture effects, which reduce aqueous concentrations, especially of high molecular weight "risk driving compounds" compounds (*e.g.*, benzo(a)pyrene and dibenzo(a,h)anthracene).

NSPW has developed two additional estimates of the COC concentration in the sheen. For the first, the aqueous solubility of COCs was adjusted using Raoult's Law to account for the adjustment in solubility when chemicals are present in a mixture, a well known and accepted approach for estimating individual constituent solubilities for mixtures (*e.g.*, Cohen & Mercer, 1993).

$$C_{aq} = \frac{n_i}{n_T} S$$

where

C_{aq}	=	aqueous solubility for chemical mixture (µg/L) (*i.e.*, pure phase water solubility)
S	=	chemical solubility limit in water for a single chemical (µg/L)
n_i	=	moles of chemical "i" in the mixture (mol)
n_T	=	total moles of all chemicals in the mixture (mol)

For the second estimate, COC concentrations were assigned based on their relative fraction of total organics in NAPL, assuming the sheen had a total organics concentration of 2.4 mg/L. As discussed in the HHRA (p. 6-7), based on the appearance of the sheen, the total hydrocarbon concentration in the sheen likely ranges between 0.2 and 2.4 mg/L, meaning the 2.4 mg/L may be an upper bound estimate of the organics in the sheen. This value is substantially lower than the total hydrocarbon concentration estimated using the other methods.

Table 2.1 presents a summary of the sheen COC concentration estimates, the two used in the HHRA, and the two additional methods used here. In addition, the maximum surface water sample results from 1998 (12 samples in January and one in May) and 2005 (32 samples collected in June and

November) are presented in Table 2.1 for comparison. The sample collected in May 1998 was the only sample in which COC concentrations exceeded either ambient water quality criteria or risk-based screening concentrations (RBSCs).

Table 2.1
Reported Concentrations used to Estimate Sheen on Surface Water and Associated Risks

Chemical of Concern ("Risk Drivers")	COC Concentration (µg/L)					
	DNAPL[a]	Solubility Limit[b]	Raoult's Law Solubility Limit[c]	Sheen @ 2.4 mg/L total organics[d]	Surface Water 1998 (max)	Surface Water 2005 (max)
Benzene	44,000	1,750,000	572,697	685	0.88	0.74
Benzo(a)pyrene	400	1.62	0.006	6.2[e]	0.33	ND
Benzo(b)fluoranthene	360	1.50	0.002	5.6[e]	0.17	ND
Benzo(k)fluoranthene	110	0.80	0.0002	1.7[e]	0.10	ND
Chrysene	391	1.00	0.003	6.1[e]	0.27	ND
Dibenzo(a,h)anthracene	110	2.49	0.0001	1.7[e]	0.17	ND
Indeno(1,2,3)pyrene	160	0.02	0.021	2.5[e]	0.42	ND

Notes

a - Attachment I1 Table 32

b - Attachment I2 Table 32 Pure Phase concentration provided in mg/cm^3. Those values multiplied by 1,000 cm^3/L (and then 1,000 µg/mg).

c - Revised calculations using Raoult's Law

d - COCs in proportion to NAPL fraction (including o-cresol and m,p-cresols) assuming total hydrocarbons are 2.4 mg/L;

e - Indicates calculated value exceeds water solubility limit.

ND = not detected

As can be seen in Table 2.1, the sheen COC concentration estimates vary by orders of magnitude (up to eight for benzene), depending on which of the four methods is used. None of the methods correlate well with the surface water sampling results, *i.e.*, benzene is dramatically overestimated in all cases and PAHs are also dramatically overestimated in nearly all instances but the Raoult's Law method. As a consequence, the hypothetical human health risks of exposure to the sheen will vary greatly depending on which method to estimate concentrations is used. Clearly, disparity in the COC estimates yields such large uncertainties in risk that the resulting risk estimates are unreliable.

2.2.2 Sheen Risks Inappropriately Assumed Frequent Exposure

In the HHRA, the hypothetical sheen risks presumed the same exposure assumptions (*i.e.*, exposure time, frequency, and duration) for the sheen as were used for exposure to surface water. Based on the infrequent occurrence of the sheens, it is unrealistic to assume sheens would be present every time a person swims or wades in Chequamegon Bay. Even if the sheen were present when a receptor was swimming/wading, the likelihood that the swimmer/wader would actually encounter the sheen is

relatively small, given the size of the sheen relative to the size of the swimming/wading area, the focal location of the sheen (near the former wastewater treatment plant) relative to where a person would likely be swimming/wading, a swimmer's/wader's natural tendency to avoid an observable sheen, and since the bay is not used for swimming/wading for most of the year. In addition, the assumption that a person would encounter a sheen for the same duration as the "baseline" swimmer/wader scenario is highly unlikely.

To illustrate the large uncertainties, and the lack of reliability in the sheen risk calculations, NSPW has re-calculated the risks using more reasonable exposure factors as summarized below.[8] For this example, risks for the adult swimmer, the scenario with highest potential risks, were calculated. The hypothetical cancer risk for this scenario is 9×10^{-6} and the non-cancer hazard is 0.009 (using the 2.4 mg/L total hydrocarbon sheen COC estimation method – see Table 2.1), below EPA and WDNR acceptable risk ranges.

Table 2.2
Sheen Risk Comparison

Exposure Factor	HHRA Value	Adjusted Value
Exposure Frequency (d/yr)	12	2
Exposure Duration (yr)	30	5
Exposure Time (min/event)	60	10
Surface Area Exposed (cm^2)	18,000	18,000
Surface Water Ingestion Rate (L/hr)	0.05	0.05
Cancer Risk (Adult Swimmer)	9×10^{-2}	9×10^{-6}
Non-Cancer Hazard Index	6	0.009

Moreover, there is additional uncertainty as to whether DNAPL in the sediment is actually the source of sheens that have been observed in the bay. Although DNAPL in the sediment is a potential source, there are other potential sources in the area that could release sheens to the bay. These include discharges from storm sewers and combined sewer overflows, subsurface migration from upland sources in Kreher Park, as well as marina use.

[8] Standard exposure factors such as body weight and averaging times were the same as those used in the HHRA.

2.3 EPA has not Demonstrated that NAPLs Present in Deep Chequamegon Bay Sediments are a Principal Threat Waste

NSPW agrees with the National Remedy Review Board's (NRRB's) assessment that EPA has not adequately defined Principal Threat Wastes at the Site.[9] Although EPA's remediation rationale is not clearly defined in the PRAP, it appears to be that NAPLs in deep sediments are considered principal threat wastes as defined in Section 300.430(a)(iii) of the NCP,[10] and hence need to be addressed (US EPA, 2003c). EPA (1991)[11] defines principal threat wastes as "source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur." EPA's *Rules of Thumb for Superfund Remedy Selection* (540-R-97-013, August 1997) further clarifies the principal threat concept:

> Although no "threshold level" of risk has been established to identify principal threat waste, a general rule of thumb is to consider as a principal threat those source materials with ***toxicity and mobility characteristics that combine to pose a potential risk several orders of magnitude greater than the risk level that is acceptable for the current or reasonably anticipated future land use, given realistic exposure scenarios***. [emphasis added]

Thus, for NAPLs in deep sediments to warrant consideration as a principal threat, they must pose dramatically high risks to humans or ecological receptors due to their toxicity and/or mobility. As discussed below, based on the findings of the RI, and as previously expressed by EPA in its information package to the NRRB (2008), deep sediments are neither highly toxic nor highly mobile and therefore do not warrant *de facto* consideration as a principal threat waste by EPA.

EPA's package to the NRRB (2008) describes that deep sediments are not highly toxic to ecological receptors or humans. EPA identified "potentially unacceptable" ecological impacts to benthic macroinvertebrates from exposure to shallow sediments, but there were no defined ecological risks from deep sediments. EPA identified three human health exposure pathways (residential exposures to soil; construction worker exposure to soil, and worker exposure to indoor air) with calculated risk levels exceeding EPA's target risk levels. None of these three pathways have anything to do with sediments (shallow or deep). As discussed in Section 2.2, whether the sporadic surface water sheens pose any risk

[9] "The definition of principal threat waste presented in the package [to the NRRB] is not consistent with EPA guidance. The Board recommends that the Region clarify what are the principal and/or low level threats..." (p.1)

[10] "EPA expects to use treatment to address the principal threats posed by a site. Principal threats for which treatment is most likely to be appropriate include liquids, areas contaminated with high concentrations of toxic compounds, and highly mobile materials... EPA expects to use engineering controls, such as containment, for waste that poses a relatively low long-term threat..."

[11] US EPA. 1991. "A Guide to Principal Threat and Low Level Threat Wastes." 9380.3-06FS. November.

to human health has not been defined with any certainty, and therefore the sheen risk calculations provided in the HHRA should not be used for remedy decision-making. Additionally, whether sheens are even related to NAPL in sediments has not been defined.

NAPL present in deep sediments also does not warrant consideration as a principal threat on the basis of mobility. This NAPL is sequestered within a stable sediment bed with high levels of organic carbon. A layer of wood chips/debris, averaging 9 inches thick but ranging up to 7 ft, overlies native sediment throughout the Site. According to URS (2008a), "NAPL is found at depths up to four feet below the sediment/wood waste and water interface..." The fact that NAPL is still present in sediments after 50 to 100 years demonstrates its environmental immobility. Likewise, Chequamegon Bay has a slow sediment deposition rate (0.3 cm/yr for 50 years). The Sediment Stability Assessment submitted to EPA (URS, 2008b) showed that "[r]isk associated with future releases of contaminated sediments is minimal and limited to wave induced erosion and prop-wash-induced scouring...In general, site sediments are not significantly resuspended by waves" (URS, 2008b, Section 10). Even under conservative modeling assumptions, a maximum exposure of 6.5 cm of sediment by wave action and 4 cm by prop wash was expected. There was little evidence of bioturbation, ice scour, or seiche effects. Thus, sediments over 6.5 cm in depth are expected to be stable from natural and anthropogenic effects.

3 Appropriate Sediment Performance Standards Must be Established in the ROD

NSPW agrees with the NRRB that EPA Region V should define Remedy Performance Standards (Performance Standards) independent of the sediment PRGs. Performance Standards, such as acceptable post-dredge total PAH levels, an appropriate dredge residual management process, and, the use of average concentrations to evaluate performance of the remedy, among other Performance Standards, are critical to the success of the project, particularly in light of the significant technical flaws underlying the proposed PRG, as described above. The absence of demonstrated risk from sediments strengthens the need for realistic, reasonable, science-based Performance Standards.

NSPW has previously submitted to EPA proposed approaches to developing dredging Performance Standards, such as the April 3, 2009 proposal (included as Attachment C). It is critical that the ROD contain technically appropriate Performance Standards.

3.1 The Sediment PRG is Not a Remedy Performance Standard

A key component of any appropriate, scientifically-based Performance Standard approach is the recognition that experience at hundreds of contaminated sediment sites shows that dredging is not 100% effective and post-dredging residuals are unavoidable (US EPA, 2005a; ERDC-EL, 2008a,b; NRC, 2007). Moreover, re-dredging of dredging residuals has generally not been effective even though it has been tried in numerous cases (NRC, 2007; GW Partners, 2008).

As such, one Performance Standard, among others, that EPA should recognize, and which is an integral part of **an appropriate dredge residual management process**, is backfilling with habitat/cover material (this is not merely an "added bonus" as suggested by EPA, Region V, in response to the NRRB's recommendations). The placement of habitat/cover material over dredged areas is now recognized as a technically feasible and scientifically defensible component of dredging and has been implemented by both WDNR and EPA Region V. Post-dredge habitat restoration/cover material, is an effective and proven engineering option for control of dredging residuals, particularly where modern dredge control technology is coupled with adequate sediment characterization and dredge prism design to ensure that undisturbed residuals (*i.e.*, undetected contamination below the dredge cut line) are minimized.

The design specifications and placement of habitat/cover material over dredged areas are dependent upon clear and defined Performance Standards, and a clear and defined process to achieve the post-dredge

Performance Standards. Post-dredge Performance Standards achieve environmental protection equivalent to a designated PRG for sediment total PAH concentration. For example, the post-dredge Performance Standards can be based on removal of sediment to a specified target elevation, corresponding to the PRG, followed by placement of a protective habitat/cover to meet the post-dredge PAH concentration. The protective habitat/cover would be designed to be stable and resistant to bed shear stresses induced by wind/wave events, propeller wash, or anchoring. This type of post-dredge Performance Standard process is recognized as an integral part of dredging remedies and has been implemented in Wisconsin.

A conceptual diagram depicting the use of a project Performance Standard for sediment dredging at the Site is shown below in Figure 3.1.

Figure 3.1. Conceptual Diagram for Implementing a Performance Standard Approach for the Ashland/NSPW Lakefront Site

Overall, the post-dredge Performance Standard for a contaminated sediment remediation project **must be clearly defined before a remedy approach can be selected, designed, and implemented** (ERDC-EL, 2008b).

NSPW recommends that post-dredge Performance Standards for the Site be based on proven scientific principles and on successful state and EPA Region V dredging projects utilizing post-dredge Performance Standards. The Performance Standards process must be developed in advance of, and be incorporated into, the ROD (and not be developed during the RD/RA design stage).

3.2 The PRG is a Value that Needs to be Met on Average, Not on a Point-by-Point Basis

Another example of a Performance Standard that clearly should be established *prior to* the selection of the ultimate remedy in the ROD, is a Performance Standard that will be used to measure or confirm the attainment of the stated PRGs. While EPA's proposed media-specific PRGs for chemicals in soils, groundwater and sediment are defined in the RI report,[12] EPA has not yet selected a Performance Standard that will determine how to measure attainment.

Post-remediation spatial average concentrations (for tPAHs) are the appropriate Performance Standard to measure attainment of the PRGs, given that the sediment PRG for total PAHs was developed based on the baseline ecological risk assessment and for other reasons, as outlined further below. The use of average target concentrations as Performance Standards has been adopted at numerous sites within EPA Region V, including sediment-contaminated sites in Wisconsin and has been recognized by the National Research Council (NRC) in *Sediment Dredging at Superfund Megasites* (NRC, 2007) as the appropriate basis for establishing chemical Performance Standards to achieve risk-based cleanup levels. Specifically, the NRC has explained:

> When comparing post-remediation concentration data to cleanup levels, risk managers sometimes treat the cleanup levels as concentrations that should never be exceeded. However, this approach is not necessarily appropriate or consistent with the evaluation of human health and ecologic exposure conducted in the baseline risk assessments and, more importantly, with the derivation of cleanup levels. **EPA guidance (EPA, 1989b) recommends use of the arithmetic mean concentrations within each exposure area to quantify exposures to chemicals of concern over time**. (added emphasis)

Thus, as recognized by the NRC, an appropriate Performance Standard for determining whether cleanup has met the desired risk-based cleanup goals is to determine whether the post-remedial arithmetic mean concentration within the exposure area (remediated area) meets the cleanup goal (PRGs). Because sampling data by definition are finite and yield only an estimate of the arithmetic mean, surface weighted average concentrations (SWAC) or other statistical methods must be applied to compare the post-remediation mean to the PRGs.

This approach of achieving the cleanup goal on average within an exposure area (remediation area), is not limited to sediment remediation but is also recognized in EPA guidance pertaining to the attainment of risk-based soil cleanups (US EPA, 2005b):

[12] Remedial Action Objectives Technical Memorandum, June 6, 2007 – Appendix A to the Remedial Investigation Report (URS, 2007b).

> A vital concept in this document is the difference between the implementation of a cleanup level as a not-to-exceed level or as an area average. The not-to-exceed option typically entails treating or removing all soil with contaminant concentrations exceeding the cleanup level. The area average option typically involves treating or removing soils with the highest contaminant concentrations such that the average (usually the upper confidence limit of the average) concentration remaining onsite after remediation is at or below the cleanup level. A key factor driving the choice between these options is the basis for the cleanup level. The method used in implementing the cleanup level should be compatible with the method used in establishing the cleanup level.

EPA recognizes that when a cleanup level is risk-based, the appropriate Performance Standard to measure attainment of the cleanup level is the post-remediation average constituent concentration (or a statistically-based estimate of the average).[13]

Use of an area average concentration to evaluate the performance of a dredging project (or soil cleanup) is based on the scientific principle that risk-based cleanup goals are based on contaminant concentrations defined in "exposure units." Not only is it appropriate to assess compliance with risk-based cleanup levels within spatial exposure units, risks to benthic invertebrates – the basis for the RAO for sediments at the Site – also should be assessed using average sediment concentrations within the biologically active zone (i.e., the top 6 inches of sediment).

Significant precedent exists for the use of SWAC and other statistically based averaging methods at Superfund sites within Wisconsin and Region V, as the following examples illustrate:

- Lower Fox River OU1 (WI) – SWAC targets for sediment cleanup were key to the successful advancement of the project and to its overall success (GW Partners, 2007).
- Sheboygan River and Harbor Site (WI) – The Performance Standard was removal of 88% of the polychlorinated biphenyl (PCB) mass in the Upper River to achieve a SWAC of 0.5 ppm PCBs over time (US EPA, 2007).
- Shiawassee River (MI) – The selected Performance Standard, or remedial action level (RAL), was based on a post-remediation SWAC goal of 1 mg/kg PCBs along the first river mile downstream of the facility (ROD, US EPA, 2001).
- Fields Brook (OH) – Remedial action Performance Standards for sediments and soils were based on removal targets such that the post-remediation 95% UCLM (upper confidence limit on the arithmetic mean) met the risk-based cleanup levels within designated reaches of the Brook (ROD ESD; US EPA, 1997).
- Little Mississinewa River (IN) – The achievement of the ecological risk-based sediment cleanup goals was based on averaging over 1-mile stretches of this river; a remedial

[13] This same approach is consistent with EPA's Soil Screening Guidance (US EPA, 1996), which establishes that the upper-bound average concentration [95% upper confidence limit for mean (UCLM)] at a site is the appropriate comparison to the soil screening level (SSL) when determining whether a constituent could require remediation (*e.g.*, this allows for some sample locations to exceed the risk-based cleanup level).

action limit for PCBs ranging from 4 to 5 ppm, depending on sediment depth, was established to achieve a 1 ppm cleanup level on average (ROD, US EPA, 2004).

In its responses to the NRRB, EPA Region V indicated that it is considering sediment cleanup based on a SWAC. For reasons outlined above, together with the ample precedent in EPA Region V, NSPW agrees that, if any sediment remedy is needed, a post-remediation SWAC to achieve the risk-based tPAH cleanup level is an appropriate Performance Standard for sediments. However, NSPW disagrees with EPA Region V when it indicated in comments to the NRRB that the SWAC Performance Standard would not be defined in the ROD, but instead "during the design." While specific dredging boundaries and depths to achieve a SWAC may be appropriately defined during the design stage, the ROD should clearly define the sediment cleanup Performance Standard to achieve the tPAH PRG as a SWAC, rather than on a point by point basis. Thus, EPA should recognize a SWAC Performance Standard, among other Performance Standards, prior to selecting a final remedy in the ROD.

4 EPA's Proposed Sediment Remedy Does Not Objectively Satisfy NCP Criteria

According to the NCP, CERCLA and EPA guidance, when selecting a preferred remedial alternative EPA is required to evaluate alternatives according to the following 9 criteria (US EPA, 1990, 1997):

1. Overall protection of human health and the environment 2. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)	***Threshold Criteria***
3. Long-term effectiveness and permanence 4. Reduction in toxicity, mobility, and volume of waste 5. Short-term effectiveness 6. Implementability 7. Cost	***Balancing Criteria***
8. State Support/Agency Acceptance 9. Community Acceptance	***Modifying Criteria***

All selected remedies must satisfy the Threshold Criteria. Among alternatives that satisfy the Threshold Criteria, the preferred remedy is selected based on an evaluation of the Balancing Criteria and Modifying Criteria.

As discussed in the PRAP, sediment remedial alternatives Sed-4, Sed-5 and Sed-6 all meet the Threshold Criteria. As between the 5 balancing criteria, it appears that the only material difference ascribed to these three sediment alternatives in the PRAP, other than the effectiveness, safety, and implementation concerns already discussed above, is cost. Note in particular:

1) Removing the bay water and sediments overlying the Copper Falls formation poses significant potential for basal heave failure. If such failure occurred, the artesian conditions in the underlying aquifer would blow water upward through the excavation bottom, with potentially catastrophic risk to worker safety, construction disruption and the mobilization of previously largely contained contaminated sediments.

2) Even absent basal heave, there are increased occupational risks of death or injuries associated with implementing Sed-6 *versus* other alternatives.

3) Increased airborne emissions of volatile compounds, especially benzene and naphthalene, into the surrounding community, and the risk of exposure to these chemicals.

4) Greater community disruption due to the longer Sed-6 remedy duration.

For reasons discussed below, NSPW believes that Sed-4 is clearly superior to Sed-6 with respect to the short-term effectiveness and implementability criteria. Sed-6 will take longer to implement than Sed-4, causing greater disruption to the surrounding community and greater short-term health and safety risks. Sed-6 also uses dry dredging remedial technologies that have not been proven safe or effective at a sediment dredging project of this scale (*i.e.*, size) and in such a setting (*i.e.*, open water of the Great Lakes), whereas the mechanical or hydraulic dredging options to be utilized as part of Sed-4 are proven methods for sediment remediation.

All of these risks speak to Sed-6's inability to satisfy, as compared to Sed-4, the balancing criteria of short-term effectiveness and implementability and also to the modifying criteria of community acceptance. Several comments have already been advanced by members of the community questioning the approach of recommending an unproven and unsafe remedial strategy at significantly more cost when an equally protective alternative exists. For these reasons, discussed in more detail below, the selection of Sed-6 over Sed-4 as the preferred alternative for sediments is arbitrary and inconsistent with the NCP remedy selection process.

Even if cost were the *only* difference among these alternative sediment remedies, EPA's selection of the most expensive alternative (Sed-6) as the preferred alternative, with no material difference in the balancing criteria relative to Sed-4, is inconsistent with the statutory mandate that the selected remedy be cost-effective. According to the NCP, remedial alternatives may be eliminated if they provide "effectiveness and implementability similar to that of another alternative by employing a similar method of treatment or engineering control, but at greater cost" (US EPA, 1996, added emphasis).

4.1 Sed-6 Fails the NCP Short-term Effectiveness (Health & Safety) Criterion Relative to Sed-4

The PRAP states that "[a]ll other alternatives [Sed-3, Sed-4, Sed-5, Sed-6] would have the potential of some short-term risk from release of volatile emissions during debris removal and onshore dewatering and/or treatment and transportation" (US EPA, 2009, p. 23). EPA has conducted no analysis comparing the differences in the short-term effectiveness of any of these alternatives, implying there is no difference in the short-term health and safety risks of Sed-4 and Sed-6. The PRAP does not mention the significant safety and environmental risk inherent in attempting to dewater the embayment in the lake. Additionally, the significantly longer duration and increased labor required for Sed-6 *versus* Sed-4 carries with it increased risks to worker health and safety during remedy implementation. Volatile emissions

associated with "dry" excavation (Sed-6) are expected to significantly exceed those associated with hydraulic dredging, leading to greater odor problems and potential risks to the community for the Sed-6 alternative relative to Sed-4.

4.1.1 There are Dry Dredge Safety and Environmental Impact Concerns from Basal Heave Failure

Safety is a priority on any project, and is one of the core values of NSPW. Analysis of boring log lithology and hydrogeology at the Site has exposed a potentially serious risk to human health and the environment associated with dry dredge removal of inner bay sediments (Sed-6).

Estimates of effective stress using measurements of hydraulic head at monitoring well MW-25A demonstrate that the upward force (artesian force) in the Copper Falls aquifer would exceed the downward force during a dry excavation scenario, resulting in a negative effective stress as illustrated in Figure 4.1. Therefore, under certain removal conditions, uplift pressures from the artesian conditions at the base of the aquitard will exceed the overburden pressures. If the uplift forces are not counter-balanced by overburden forces during sediment removal operations, then failure may result (basal heave failure), with potentially catastrophic risk to worker safety, construction disruption and mobilization of contaminated sediments (Figure 4.2).

In addition to unsafe conditions for workers, a basal heave failure could also lead to dislodging/mobilization of the contaminant plume in the area of the former MGP which is currently contained by artesian conditions and the destruction of the artesian wells along the shoreline because the Miller Creek aquitard may be rendered irreparable.

Given the enormous potential safety risk, both to human health and the environment, posed by the dry removal of inner bay sediments, NSPW recommends that EPA abandon the Sed-6 remedy alternative. If any sediment removal is required for remediation, wet dredging is the only safe and cost-effective alternative.

Figure 4.1. Hydrogeologic Cross Section and Evaluation of Effective Stress, as Depicted in the Technical Work Group Meeting in Madison, WI on May 29, 2009

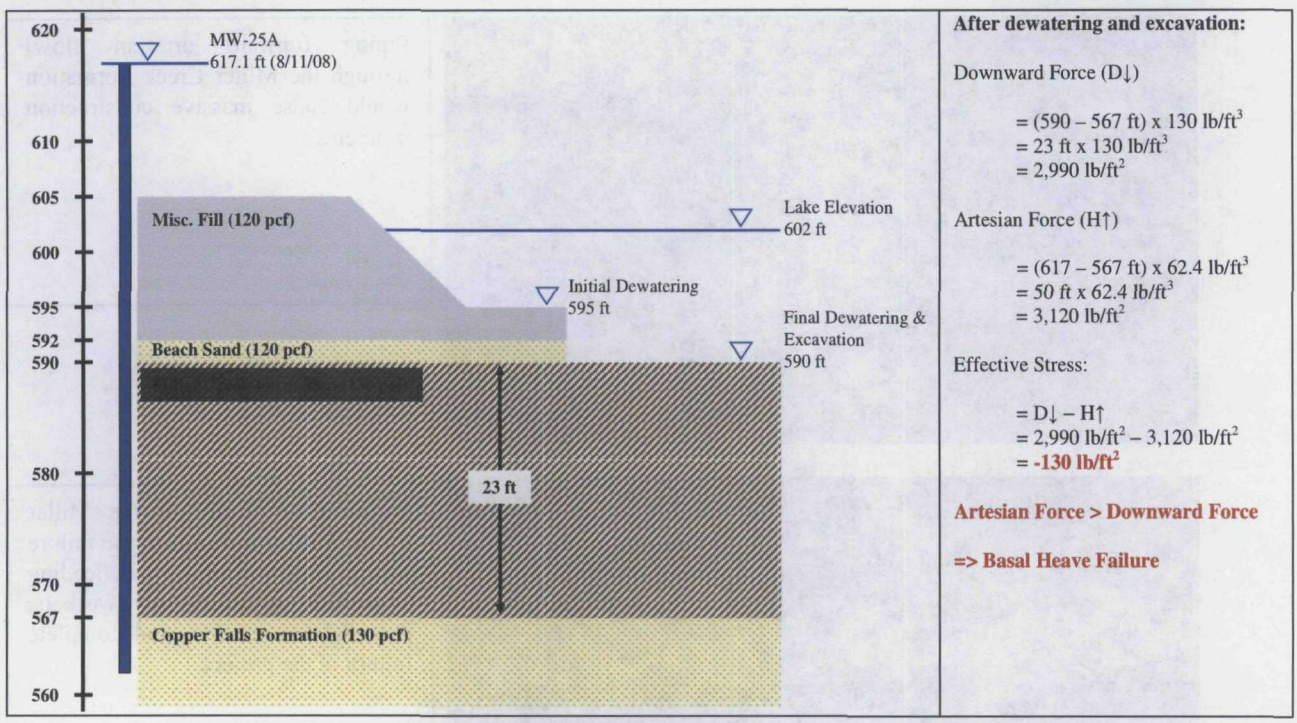


Figure 4.2. Excerpts from the Basal Heave Video Shown During the Public Comment Meeting in Ashland, WI on June 29, 2009

Piping (upward artesian flow) through the Miller Creek Formation would cause massive construction problems.

Basal heave failure of the Miller Creek Formation would cause failure of the outer sheet pile wall, leading to unsafe conditions for workers, potential loss of life, and complete failure of the project.

Basal heave failure of the Miller Creek Formation could potentially release groundwater contamination near the former MGP site, which is currently held in place *via* artesian forces.

4.1.2 Safety Risks of Implementing Sed-6 Significantly Exceed Safety Risks of Sed-4

The extent of the consideration of risks to workers implementing either Sed-4 or Sed-6 in the PRAP is a declaration that, "[a]dequate controls would be in place to ensure worker and community safety during remedial alternatives" (US EPA, 2009, p. 23). However, typical health and safety measures – such as personal protection equipment (PPE) and air monitoring – would not mitigate the substantial risks to workers associated with transportation- or construction-related fatalities that could occur during remediation.

Using peer-reviewed methods,[14] NSPW has estimated the increased occupational risks of death or injuries associated with implementing Sed-6 *versus* Sed-4 (see Attachment A). The increased duration and labor required to implement Sed-6 carries with it increased occupational risks relative to Sed-4 as summarized below.

Risk Category	Sed-4C	Sed-6C	Increased Risk
Risk of Fatality	4.4×10^{-2}	5.5×10^{-2}	23%
Probability of at Least One Fatality	4.3%	5.3%	23%
Estimated Number of Injuries	4.7	5.8	23%

As NSPW's analysis indicates, the actuarial risks of Sed-6 are 23% greater than those for Sed-4, without even accounting for the potential catastrophic failure that could occur for Sed-6 due to potential basal heave as described earlier. For perspective, the human health risk of exposure to sediment-related contamination presented in the PRAP is 1×10^{-5}. Thus the actuarial risk of incurring a fatality during the remedy far exceeds the potential cancer risk associated with chemical exposure. Furthermore, chemical risks represent the risk of cancer, not death.

Without this type of reasoned analysis, EPA has selected a preferred alternative remedy for sediments without due consideration of short-term effectiveness of the remedial alternatives, which is contrary to the process required by the NCP. Sed-6 poses increased occupational risks to workers as compared to Sed-4, yet both alternatives provide equivalent protection of human health and the environment and both satisfy the NCP and CERCLA threshold criteria for remedy selection.

[14] Methods for estimating the occupational risks of worker fatalities and injuries have been published by Leigh and Hoskin (1999), Hoskin et al. (1994), and Cohen et al. (1997). These methods rely upon actuarial statistics of worker fatalities and injuries published by the Bureau of Labor Statistics (BLS).

4.1.3 Air Emissions from Sed-6 Exceed Emissions for Sed-4

In selecting Sed-6 over Sed-4 as the preferred remedy, the PRAP ignores the fact that airborne emissions of volatile compounds, especially benzene and naphthalene, for Sed-6 can be reasonably expected to exceed the airborne emissions for these volatiles for the Sed-4 remedy. Exposure to higher concentrations of these compounds during Sed-6 remediation (likely given the lack of the water column acting as a barrier as would be the case with dredging pursuant to Sed-4) carries with it an increased potential health risk to the workers and residents within the community. This expectation of greater emissions from dry dredging *versus* hydraulic dredging is based on empirical data for benzene emissions at not only this Site, but another analogous sediment contaminated site (see Attachment B for more details):

- During the EPA-approved Treatability Study to evaluate emissions from the Ashland Site, short-term benzene emissions from exposed sediments were nearly twofold greater than emissions under conditions simulating wet dredging.
- At the St. Louis River/Interlake/Duluth Tar Site where sediments were contaminated with tar, short-term benzene volatilization from exposed sediment (*e.g.*, comparable to the "dry dredge" Sed-6 option) was found to be sixfold greater than benzene volatilization from a 1% solids slurry representing the conditions associated with wet dredging.

NSPW has conducted air emissions and dispersion modeling to provide a quantitative comparison of the increased volatile emissions associated with Sed-6, using benzene as an indicator compound. Details of the air modeling, which adopted the methods employed in the FS, are provided in Attachment B. Isoconcentration contours for 24-hour benzene concentrations were developed for both Sed-4 and Sed-6 alternatives. A direct comparison of the 10% of the benzene Threshold Limit Value (TLV)[15] (160 $\mu g/m^3$) for these two alternatives (Figure 4.3) indicates that the benzene "plume" for Sed-6 is larger than that for Sed-4. As discussed in Attachment B, this comparison does not include the onshore (*e.g.*, dewatering, stockpiling) activity emissions. Including the onshore activities is expected to increase air emissions impacts by 13 to 45%. Similar to benzene, it is anticipated that naphthalene, the prevalent PAH in sediment, would be greater for the dry excavation Sed-6 remedial alternative as compared to Sed-4.

Odor related nuisance issues, typically a significant consideration for nearby communities, are also expected to be much greater for the Sed-6 *versus* the Sed-4 alternative. The odor recognition

[15] Benzene does not have a specific ambient threshold value, although it does have an annual averaging period listed in the WDNR regulation (Table A, NR 445.07). The WDNR air toxic rule discusses the possibility of using a 10% adjustment to the TLV (benzene TLV is 1,600 $\mu g/m^3$) for a chemical with a 24-hour averaging period. Even though benzene is listed with an annual averaging period, because the activity periods are of a shorter-term nature, it was thought that using 10% value of the TLV, or 160 $\mu g/m^3$, would be an acceptable approach at defining an impact threshold.

threshold levels for both Sed-4 and Sed-6 are graphically displayed in Figure 4.4, which presents the 1 Odor Unit and 2 Odor Unit isoconcentration contours. Again, the modeled results exclude the onshore dewatering and related sediment processing to compare the odor plumes of the wet dredging and dry excavation options. The modeling results indicate that the Sed-6 alternative has a greater potential to cause odors to be detectable over a larger area for both the 1 Odor Unit and 2 Odor Unit recognition threshold values relative to alternative Sed-4.

Overall, air quality impacts from alternative Sed-6 are predicted to be more extensive than those from alternative Sed-4. The impacts associated with Sed-6 will likely affect a larger area and will occur over a longer duration relative to Sed-4 due to longer implementation duration. This makes community acceptance of Sed-6 to be less likely than that associated with Sed-4. In addition, engineering and performance controls needed to control emissions from a large dewatered area are much more complex and therefore less implementable than wet dredge options. As an example, emissions from dredging can be controlled substantially by stopping or modifying dredging activities; however, stopping excavation activity will not stop volatile emissions from a large area of exposed saturated sediment (dry dredge scenario). Under some conditions the only recourse for controlling exposure to elevated levels of volatilized contaminants or odors under the Sed-6 alternative may be temporary evacuation of area residents and businesses, making significant local disruption likely.

Given that both Sed-4 and Sed-6 meet the NCP Threshold Criteria for remedy selection, it is inconsistent with the NCP, CERCLA and EPA guidance to select a preferred alternative (Sed-6) that is inferior to an alternative (Sed-4) on the basis of the short-term effectiveness balancing criterion.

Figure 4.3. Comparison of Alternative Sed-6 and Alternative Sed-4-Benzene 1/10th TLV Concentration Lines of 160 µg/m³

Figure 4.4. Threshold Recognition Odor Units – Alternative Sed-4 and Sed-6

4.1.4 Community Disruption Greater Due to Much Longer Duration of Sed-6 Relative to Sed-4

The Sed-6 alternative will require one to two or more years than Sed-4 to implement (based on the FS-estimated durations of approximately four *versus* two years), with associated community impacts such as noise, odors, loss of Kreher Park use, delay of implementation of the City's Waterfront Redevelopment Plan and truck traffic during that longer time period. Significant additional elements required for the Sed-6 alternative that are not necessary for the Sed-4 alternative and will result in prolonging the project unnecessarily include the following:

- Conduct pre-trenching along proposed landward sheet pile alignment;
- Move/abandon existing utilities on the east and west sides on the upland areas;
- Install wave attenuator(s) or break wall;
- Install reinforced sheetpile in lake and along the east and west sides (this is structurally stronger than the sheetpile that potentially will be installed as part of Sed-4 to control dispersion);
- Operate lake water removal system and treatment plant for water inside of containment to drain bay prior to dry excavation and maintain bay drained during excavation; and
- Remove more extensive piling in bay and on the east and west sides, upon project completion.

In addition, the schedule could be significantly extended further for a variety of reasons under the Sed-6 scenario, such as a need to construct coffer dam cells to prevent cross contamination and mud flows; failure of the lakeside sheetpile due to ice damage in the spring which may be avoided in Sed-4; failure of the sheet pile wall due to groundwater upwelling; flooding conditions caused by excessive wall leakage, basal heave or storm events; potentially lower productivity due to higher worker health and safety personal protection levels related to higher emissions in the excavation area and water management tasks; and equipment or power failures affecting the dewatering equipment.

4.2 Sed-6 Fails the NCP Implementability Criterion Relative to Sed-4

No distinction is made in the PRAP between the implementability of wet dredging (Sed-4) *versus* dry dredging (Sed-6); both options are described as "difficult to implement." There is no evaluation of whether dry excavation on this scale is technically feasible, nor any recognition of the potential for catastrophic failure as discussed earlier. Without a meaningful evaluation of the technical feasibility of dry dredging on the virtually unprecedented scale required by Sed-6, the selection of the Sed-6 option is simply arbitrary.

If any sediment removal is required at the Site, wet dredging is the most appropriate and proven technology and, as shown herein, is not as "difficult to implement" as dry dredging. Among the remedial alternatives evaluated in the FS, Sed-4 (wet dredging) was identified as having fewer implementation issues compared to dry dredging (Sed-6). Hydraulic dredging, a specific type of wet dredging, is a well established, proven technology and is capable of meeting the RAOs for sediment.

Use of dredging to remove contaminated sediment was well established through the early years of sediment remediation by the US Army Corps of Engineers as a primary extension of its navigational dredging, conducted over several decades. Dredging is the predominant sediment management technology at moderate-sized to large (> 10,000 cubic yard, "Tier 1") contaminated sediment sites around the world. A recent review of 60 Tier 1 contaminated sediment sites in the US found that dredging was used as the only technology or was a significant element of combined technologies for remediation in 85% of these sites (NRC, 2007).[16]

While dry excavation has been successfully used, the majority of sites where it has been implemented are on small bodies of water (*e.g.*, wetlands, streams, or ponds), which can be dewatered or rerouted relatively easily to facilitate removal by conventional excavation equipment. There is little, if any, precedent for using dry excavation at open coastal sites (*i.e.*, either marine or large lakes), which involves removal of large quantities of sediment (> 10,000 cubic yards). A review of EPA Region V sediment sites indicated that sediment removal was undertaken by wet dredging at the majority of these sites (Table 4.1).

This precedent and preference for sediment removal by wet dredging is not surprising since site preparation for dry excavation is more complex based on the need for dewatering. As discussed in EPA's *Contaminated Sediment Remediation Guidance for Hazardous Waste Sites* (US EPA, 2005):

> For example, coffer dams, sheet pile walls, or other diversions/exclusion structures would need to be fabricated and installed. Maneuvering around diversion/exclusion structures may be required because earth moving equipment cannot access the excavation area or double handling may be required to move material outside of the area. In addition, excavation is generally limited to relatively shallow areas.

In addition, open coastal sites such as Ashland are in a dynamic environment subject to weather-related stressors including high winds, waves, tides or seiches and significant precipitation, some of them

[16] Dredging refers to sediment removal from underwater environments, or "wet" dredging in the NRC report.

at times occurring simultaneously during episodic storm events. While a remedial operation using wet dredging can be secured with little damage or lost time during such events, a large, dewatered open work area such as would be needed for dry excavation at the Ashland site presents an entirely different, and potentially vulnerable, situation. Not only would there be less efficiency during severe weather events, severe weather events could result in loss of structures, equipment, or even lives. NSPW has been informed by reputable dredge contractors that the project elements commented on herein are so serious that many contractors will refuse to bid on a dry dredge remedy at this Site under these conditions.

In summary, there is substantial precedent in EPA Region V, as well as throughout the world, for using conventional wet dredging technologies accompanied by state of the practice engineering and performance controls to remove the impacted sediment from the Site. Conversely, we are aware of no example sediment sites that match the scope of the Site, where dewatering and dry dredging have been implemented. Thus, the selection of Sed-6 (dry dredging) remains an unproven remediation option, and its implementability, while unknown, clearly imposes significantly greater technical implementability challenges relative to Sed-4 and makes its local acceptance unlikely.

Table 4.1
Partial List of Wet Dredging Projects in EPA Region V

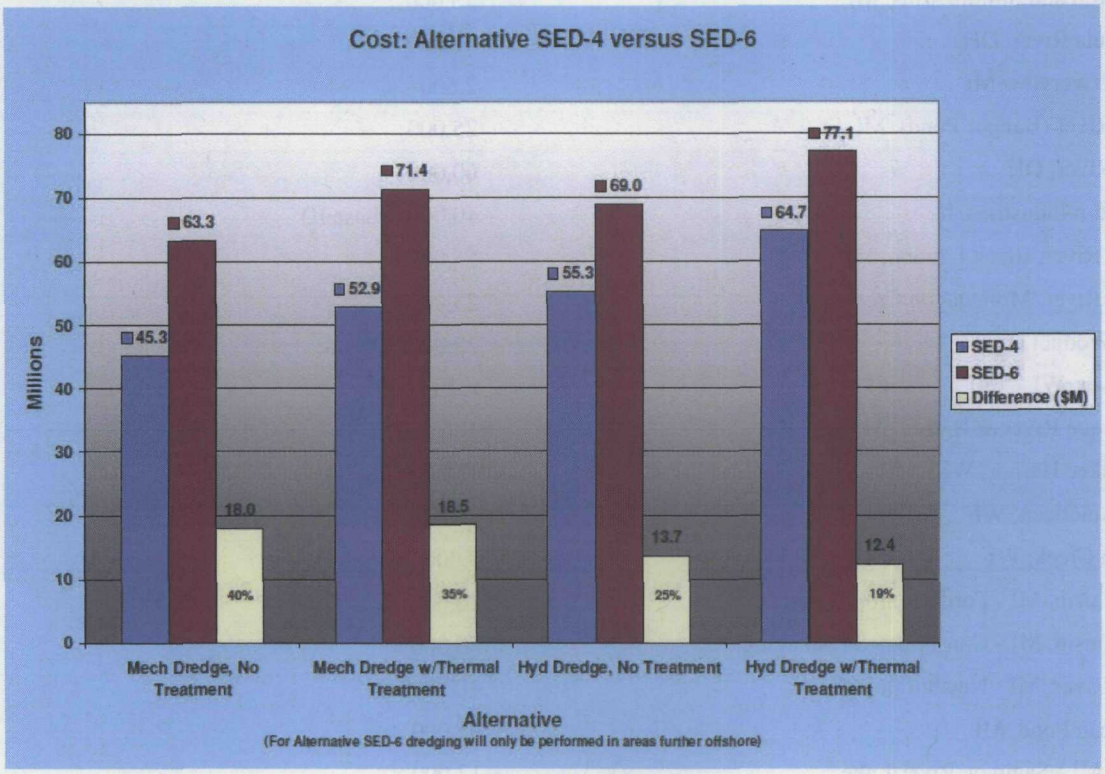
Site	Estimated Dredging Volume (yd^3)*
Alma Iron and Smith Farms, MI	15,000
Ashtabula River, OH	61,000
BASF Riverview MI	2,600
Black River (Bangor Pond), MI	25,000
Black River, OH	60,000
Cannelton Industries, IL	40,000 (Phase II)
Detroit River, Black Lagoon, MI	55,000
Detroit River, Monguagon Creek, MI	25,000
Evans Product Ditch	25,000
Fox River, WI	> 104,000
Manistique River & Harbor, MI	186,000
Milwaukee Harbor, WI	13,000
Moss American, WI	20,000
Newton Creek, WI	5,000
River Raisin, MI - Ford Monroe Outfall	20,000
River Raisin, MI - Consolidated Packaging,	30,000
Rouge River, MI - Newburgh Lake	400,000
Ruddiman Pond, MI	95,000
Linton, MI - Saginaw River/Lake	17,000
Sheboygan River & Harbor, WI	20,000
St. Claire Shores, MI	18,500
St. Louis River, MN	24,000
St. Louis River/Interlake/Duluth Tar Site, MN	> 100,000
St. Mary's River	2,600
White Lake, Tannery Bay, MI	105,500
Tittabawassee River, MI	12,000
US Steel Gary Works, IN	> 812,000
U.S.S. Lead Refinery, IN	>10,000
Waukegan Harbor, IL	136,000
Willow Run Creek, MI	450,000

*Note: *From GE Major Contaminated Sediment Sites database and GLNPO website (US EPA, 2009).*

4.3 Sed-6 Fails the NCP Cost-Effectiveness Criterion Relative to Sed-4

As described in both the FS and the PRAP, the Sed-6 alternative cost range is between $68.5 and $80.4 million. By comparison, anticipated costs for the Sed-4 alternative (which is more protective of

human health and the environment) are estimated to range from $45.3 to $65.7 million. As illustrated below, the cost for the Sed-6 alternative is between 19 and 40% higher than the Sed-4 alternative.



Major factors that result in the higher cost for the Sed-6 alternative include (but are not limited to) installation of wave attenuators, or alternatively a break wall, and a reinforced sheet pile wall to facilitate dewatering and continual removal and decontamination of water to maintain dewatered work area. The costs shown for Sed-6 do not include break walls, ice damage repair with possible wall replacement and double sheet walls with fill, which could lead to significantly greater costs.

There is no debate that Sed-6 is the most costly sediment remediation alternative. Given that Sed-4 meets the NCP/CERCLA threshold criterion for selecting among remedial alternatives at a lower cost compared to Sed-6, the selection of Sed-6 as the preferred alternative is inconsistent with the NCP, CERCLA and US EPA guidance.

5 Alternative Sediment Remedy (Sed-4) is NCP-Compliant and can Achieve RAOs

In selecting Sed-6 over Sed-4 as the preferred alternative for sediments, EPA Region V appears to place a significant weight on its perception that "[d]ry dredging would address concerns over the possible release of free product in the wood waste and sediment into the water of the bay which could potentially recontaminate areas that had been cleaned up" (US EPA, 2009, p. 27, emphasis added). The Agency neglects to consider the potential for free product release and recontamination posed by a dry dredging scenario, such as that from basal heave failure and sediment disturbance during remedy construction (*e.g.*, installing and removing sheet piling around the dry dredge area). It also fails to acknowledge that over the last three decades of environmental dredging (dredging of contaminated sediment), a range of near field and far field engineering and performance controls have been developed to minimize short-term environmental impacts, including control of free product releases. These practices are examples of dredging Performance Standards that must be developed prior to and incorporated within the ROD. Dry excavation is not a prerequisite to control the possible release of free product.

Because the goals of environmental dredging are not only to remove contaminated sediment but also to prevent release, resuspension, and dispersion of contaminants while doing so, all environmental dredging projects are designed with redundant controls to accomplish this. These consist of engineering controls (*e.g.*, equipment, structures or procedures), which work together to minimize resuspension or dispersion of contaminants, either in particulate, dissolved, or free product (NAPL) form, from leaving the immediate area where dredging is being conducted. Engineering controls are complimented by performance controls. Performance controls consist of monitoring dredge performance against pre-determined Performance Standards. Typically, environmental dredging Performance Standards include standards for contaminant volatilization, resuspension, and dispersion as well as for dredge residuals. Continual monitoring of dredge performance against these Performance Standards is the basis for modifying dredging procedures such that Performance Standards are achieved. As an example, if monitoring determines that resuspension of contaminants is greater than the resuspension standard, the dredging contractor is required to slow its production rate, change equipment, initiate additional engineering controls, or even suspend dredging until a solution is developed.

Many environmental dredging projects have been conducted successfully, with minimal environmental impact, at sites with as great or more potential than the Ashland site for releasing free product sheens. This includes the dredging project at the Gary Works site in the Grand Calumet River

where more than 750,000 cubic yards of sediment, some impacted with NAPL, were successfully dredged.

NSPW believes that engineering controls and proper design can reduce/eliminate the perceived NAPL release concern associated with wet dredging. To address the concern of potential NAPL release during hydraulic dredging, NSPW proposes two courses of action:

1. Conduct additional sediment characterization in 2009 on the nature and extent of NAPL, including its physiochemical properties (density, viscosity, solubility, *etc.*).
2. Conduct a sediment Pilot Project in 2010 to assist in designing a site-wide dredging program, if required, that ensures proper control of potential NAPL releases.

NSPW requests that the ROD allow for a sediment Pilot Project in 2010. The state of Wisconsin and EPA Region V have previously experienced challenging dredge conditions and characteristics on the Lower Fox River Superfund Site. The response was to implement two Pilot Projects (Deposit N and SMU 56/57) to better understand specific issues associated with wet dredging (*e.g.*, turbidity, dredge over-cut effectiveness, dewatering of silts/clays, *etc.*). These two Lower Fox River Pilot Projects were very successful in informing the larger full-scale removal project and significantly changed engineering perceptions on key conditions and characteristics associated with wet dredging. NSPW requests that the Ashland Site be given this same opportunity to optimize the wet dredging technique, such that the Site-wide wet dredge program ultimately implemented, if any, is as efficient, safe, and cost-effective as possible. A wet dredge pilot project would also provide the opportunity to further assess the most appropriate engineering and performance controls for implementation during the full-scale project.

6 The Proposed Soil and Groundwater Remedies

6.1 The Proposed Soil Remedy Appears to Meet the NCP Criteria

EPA's preferred soil remedy (S-5A) is removal and on-site thermal treatment of approximately 14,350 yd^3 of NAPL-impacted source material from three areas: 1) the "Coal Tar Dump" area in Kreher Park (4,800 yd^3); 2) the former MGP Site (Upper Bluff) (9,400 yd^3); and 3) the Filled Ravine (150 yd^3). The thermally treated soil will then be used as clean backfill at the Site. If thermal treatment is not cost-effective, off-site disposal will be performed (S-3A). Following excavation, each area will be capped with an impermeable surface barrier to minimize infiltration (groundwater remedy GW-2A).

As previously expressed to EPA's NRRB (NSPW, 2008), S-5A would be acceptable to NSPW as part of an *overall* remedy that is acceptable to NSPW, provided thermal treatment and on-site backfilling is feasible on the basis of cost, possible future use limitations, and the structural suitability of the thermally treated soil as backfill. Limited, but aggressive, source removal is the most efficient method to remove shallow in-situ NAPL mass serving as an ongoing source of groundwater contamination. Post-excavation application of a chemical oxidant (essentially a form of GW-6, which is *in situ* chemical oxidation) may be an alternative method to augment the S-5A alternative.

6.2 The Proposed Groundwater Remedy Contains Unjustified Elements

EPA's preferred alternative (GW-2A) for shallow groundwater includes the use of engineered surface and vertical barriers, a groundwater pump and treat system for hydraulic containment, and treatment of shallow groundwater aquifer in Kreher Park and Upper Bluff/Ravine areas (GW-2A), possibly augmented with in-situ treatment (GW-3 or GW-6). The PRAP indicates that the preferred remedy for the Copper Falls Aquifer is enhanced groundwater extraction (GW-9B), including the installation of "additional extraction wells to increase DNAPL removal...Because groundwater extraction can be a relatively slow process adding more wells would speed up the ongoing ground water cleanup." The PRAP also states that "in-place treatment using ozone sparge (GW-3) or ISCO (GW-6) can also be used to possibly enhance groundwater cleanup since treatment results in the removal of a significant amount of contamination."

The objective of the proposed groundwater remedy remains unclear, as pointed out previously by the NRRB in its comments.[17] The PRAP (p. 26) states that "the purpose of this groundwater cleanup alternative is hydraulic containment within the waste management area and restoration of the aquifer outside the waste management area" (p. 26), yet EPA has defined neither the lateral nor the vertical extent of the "waste management area," so the locations to which the "containment" and "restoration" objectives apply are undefined. Selecting a groundwater remedy without adequately defining the areas to which remedial objectives apply is premature and does not allow adequate weighting of alternatives according to NCP criteria.

Once the waste containment area has been defined, EPA should recognize in the ROD that aquifer restoration (*i.e.*, full attainment of maximum contaminant levels (MCLs) in groundwater) at DNAPL sites is generally unattainable and is likely unattainable here (as recognized by the NRRB). Additionally, the role of monitored natural attenuation in lieu of active hydraulic containment, once source concentrations have adequately attenuated, should be defined.

6.2.1 The NCP-Compliant GW-5 is Superior to GW-2A based on the Cost-Effectiveness Criterion, is More Sustainable, and is Less Restrictive for Site Redevelopment and more Cost-Effective

NSPW's preferred alternative (GW-5, possibly with GW-3 or GW-6) also includes the use of engineered surface and vertical barriers for hydraulic containment, but a PRB would be used for groundwater treatment [*i.e.*, a "funnel and gate" system, described in the FS, p. 7-10, "The non-permeable funnel (vertical barriers) serves to lead the contaminated groundwater to the highly permeable gate (PRB) which contains a reactive agent"]. The PRB will also provide hydraulic containment with passive groundwater flux through its filter media, eliminating the need for groundwater extraction and treatment. Flow through the filter media will also remove contaminants prior to discharge to the bay. However, this alternative will cost significantly less than GW-2A because it will reduce long-term operation costs inherent with an active pump and treatment system; it will only require replacement of PRB filter media as needed.

[17] "Based on the information provided to the Board, it was unclear whether the purpose of the pump and treat component of the proposed remedy is containment or restoration...The Board notes that, if hydraulic containment is chosen, then the Region...should include the rationale for the expected technical impracticability waivers in the decision documents" (Karl, 2009).

This may also better meet the public acceptance criterion because aboveground treatment systems and a subsurface piping network are eliminated, allowing fewer restrictions on future development. Although not an NCP criterion, NSPW also notes that GW-5 is a more sustainable option, since it has lower long-term energy costs.

Since Alternatives GW-5 and GW-2 weigh equally on all nine NCP criteria except cost (and possibly community acceptance), GW-5 is the appropriate NCP-compliant shallow groundwater remedy since it is substantially more cost-effective ($6.2M versus $9.2M). NSPW respectfully requests that the ROD select GW-5 as the appropriate remedy for shallow groundwater, and provide for a PRB pilot study that will optimize design and implementation of the final PRB remedy.

6.2.2 GW-9B is Unjustified

NSPW objects to the unjustified addition of a dozen extraction wells for "perpetual remediation" of contaminated groundwater. EPA has not adequately assessed the NCP cost criterion for the pump and treat system because its duration is undefined by EPA – "The actual length of time necessary to operate extraction and treatment systems will be determined by considering the progress of the system during the cleanup period" (US EPA, 2009, p. 27). Pump and treat systems, particularly when NAPL is present, are both inefficient and cost prohibitive for aquifer restoration. The ineffectiveness of pump and treat systems at meeting MCLs, especially at NAPL sites, has been presented in many documents including those authored by EPA (Mackay, 1998; US EPA, 1993;). Mackay (1998) indicates that many studies show the use of groundwater pump and treat systems are ineffective as a NAPL source removal tool due to the adsorbent characteristics of the heavier hydrocarbons on aquifer media. He proposes the use of *in situ* technologies to destroy or mobilize the NAPL for focused extraction.

NSPW recommends that the remedial alternative for the Copper Falls aquifer should focus on source removal rather than expansion of the extraction treatment system (GW-9B). The existing NAPL recovery system (essentially, GW-9A) efficiently and effectively removes NAPL source material and contaminated groundwater from three recovery wells installed in the Copper Falls aquifer. Nearly 11,000 gallons of NAPL have been removed since startup at a cost of about $135/gallon. Groundwater is also extracted from EW-4 to prevent groundwater discharge to Kreher Park; approximately one-third of the cumulative volume of groundwater treated has been removed from this extraction well. EW-4 will no longer be needed after a final groundwater remedy is implemented.

Abandonment of EW-4 will create additional treatment capacity for the existing NAPL removal system. This will allow installation of one or two additional free product recovery wells with minimal alterations to the existing system. Consequently, NSPW recommends that an optimal location at MW-2A north of St. Claire Street should be considered; nearly 12 feet of DNAPL was recently measured at this well, which is near the piping network for EW-4. These improvements will increase the efficiency of the existing system without significant cost increases.

The aforementioned improvements to the existing system should be considered with *in situ* chemical oxidation (ISCO) (GW-6) to increase the contaminant removal rate. The previous Superfund Innovative Technology Evaluation (SITE) demonstration study by EPA confirmed that source removal is positively effected by ISCO. During the SITE demo, direct push borings encountered resistance during advancement to the treatment zone depth. Additionally, pressure resistance caused by injection into the confined aquifer was recognized at the surface *via* reaction gas eruptions at existing wells. Because of these findings, a different injection technique should be considered. A proven technique at other remediation sites includes installation of drilled injection wells within the treatment zone. Oxidant would be injected at slower rates and multiple times, which would allow penetration of the treatment zone. Fluids would then be removed from the same injection wells *via* vacuum recovery. A program of periodic injection and vacuum removal from injection wells will optimize NAPL recovery.

7 Summary of NCP-Compliant NSPW Recommended Alternative Remedy

For reasons outlined in the comments above, NSPW believes that the EPA-preferred remedy described in the PRAP is inconsistent with the NCP, CERCLA and EPA guidance. NSPW's recommended alternative remedy, which is based on remedial alternatives described in the FS (URS, 2008) and is consistent with NSPW's comments to the EPA NRRB (November 18, 2008), is equally protective of human health and the environment as EPA's preferred alternative and provides for removal/treatment of the principal threats at the Site. The alternative remedy is superior to the EPA-selected preferred alternative because the alternative can be completed in a more timely manner with less disruption to the local community, can be completed with less risk to human health, safety, and the environment during remediation, and is more cost-effective. NSPW respectfully requests that this alternative should be selected as the remedy for the Site in the ROD. NSPW also requests that the ROD contain dredging Performance Standards which have not yet been developed in the PRAP.

For the upland portion of the Site (*i.e.*, soil and groundwater), NSPW recommends an aggressive strategy of NAPL source removal/destruction, coupled with hydraulic containment and treatment of impacted groundwater to the extent practicable. This incorporates the GW-5, GW-6, GW-9A, and S-5A remedy alternatives presented in the FS (URS, 2008). This strategy is consistent with the NCP's stated preference for treatment, and EPA policy on the treatment of NAPL where justified as a Principal Threat, yet it recognizes that full attainment of MCLs in groundwater at DNAPL sites *via* pump and treat is futile.[18] It is also consistent with EPA guidance for remediation of wood treating and MGP sites. Key elements of NSPW's proposed upland remedy are as follows (see also Figure 7.1):

NAPL Source Removal via Excavation and Extraction

- Kreher Park – Consistent with S-5A, excavate and thermally treat approximately 4,800 yd^3 of DNAPL-impacted soil and wood waste from the vadose and saturated zone from the former "Coal Tar Dump." During the remedy design phase, additional DNAPL source areas (within the wood waste layer at the seep area located south of the proposed excavation as well as at TW-11 near the former WWTP) should be considered for inclusion as part of the Kreher Park soil excavation remedy. Groundwater extraction and

[18] According to a 2003 EPA Expert Panel on this issue: "As far as the Panel is aware, there is no documented, peer-reviewed case study of DNAPL source-zone depletion beneath the water table where US drinking water standards or MCLs have been achieved and sustained throughout the affected subsurface volume, regardless of the in-situ technology applied. Nonetheless, at a number of DNAPL-impacted sites, closure of the sites has been reported signifying achievement of RAOs" (Expert Panel on DNAPL Remediation, 2003).

treatment will be performed as part of excavation dewatering. Post-excavation clay capping will minimize infiltration.

- MGP Site and Filled Ravine – Per S-5A, excavate and thermally treat ~7,600 to 9,400 yd^3 of DNAPL-impacted vadose and saturated zone soil from the former MGP site (including gas holder bottoms) and the filled ravine. Groundwater extraction and treatment will be performed as part of excavation dewatering. Post-excavation asphalt capping will minimize infiltration.
- Copper Falls Aquifer – Per GW-9A, continue DNAPL extraction IRM at locations EW-1 through EW-3 and if needed, augment the DNAPL extraction network with one to two additional locations near MW-2A. Abandon EW-4, which is currently located at the mouth of the former ravine.

NAPL Destruction via Oxidation

- Copper Falls Aquifer – Per GW-6, *in situ* chemical oxidation will be used to accelerate remediation of the DNAPL source material (consistent with the findings of the SITE Program pilot project).
- Kreher Park – Consistent with GW-6, *in situ* chemical oxidation (*e.g.*, permanganate) of NAPL-impacted soil and shallow groundwater *via* mixing in shallow trenches may be performed, if needed, to accelerate groundwater remediation in Kreher Park.

Hydraulic Containment and Treatment of Impacted Groundwater

- As per GW-5, a "funnel and gate" system consisting of vertical barrier walls along three sides of Kreher Park (north, south, east) will contain impacted shallow groundwater flowing from the former MGP site and Filled Ravine and direct it to the western side of Kreher Park for *in situ* "pass-through" treatment by a PRB. The PRB will treat contaminated groundwater by filtration and will also reduce hydraulic pressure thereby eliminating the need for a costly and inefficient groundwater pump and treat network in Kreher Park. Ground surface capping and stormwater controls, in combination with the barrier walls, will essentially encapsulate Kreher Park and minimize the amount of new groundwater contamination created by the downward percolation of precipitation, and will capture contaminated groundwater from migrating off-site to the bay.

Sediment Wet Dredging

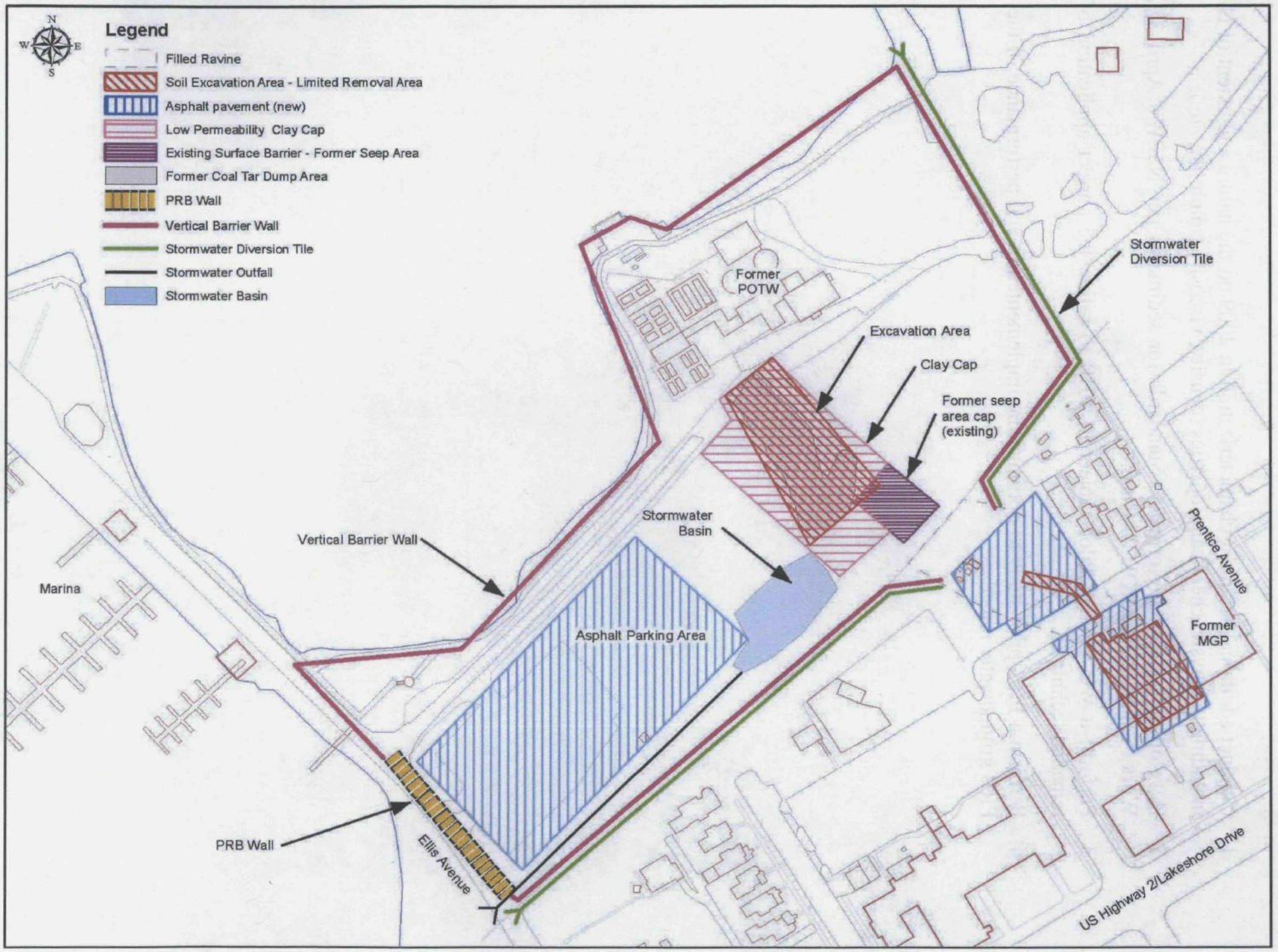
For the sediment portion of the Site, to the extent that any sediment remedy is needed, the preferred remedy should be the SED-4 remedy alternative – wet dredging of sediments to the PRG of 2,295 µg tPAHs/g OC, but to depths appropriately reflecting biological activity [*i.e.*, 0-0.5 ft below sediment surface (bss)] and the presence of organic carbon unrelated to the presence of NAPL, followed by restoration with appropriate habitat (*e.g.*, "fish mix"). Whether and how NAPL in sediments poses a "Principal Threat" must be defined by EPA in the ROD. This PRG will be practically achieved through Performance Standards (currently under development – see April 3, 2009 Work Plan, Attachment C, and comments above), which will reflect "realistic expectations" (NSPW, 2008) and incorporate such

concepts as surface-weighted averaging techniques, and attenuation provided by the final post-dredge habitat restoration. Performance Standards should be defined before the ROD is issued.

To ensure that these remedy elements are implemented correctly, NSPW proposes the following:

1. Conduct additional sediment characterization in 2009 on the nature and extent of NAPL, including its physicochemical properties (density, viscosity, solubility, *etc.*).
2. Develop appropriate Performance Standards for sediments per NSPW's April 3, 2009 Work Plan before the ROD is issued.
3. Perform a Wet Dredge Pilot Project in 2010 to refine the correct application of this remedial technique.
4. Perform a PRB pilot study to optimize the implementation and performance of the final PRB groundwater remedy.

Figure 7.1. NSPW's Preferred Soil and Groundwater Remedy



8 The PRAP Mischaracterizes the Sources of Site Contamination

NSPW has undertaken the following actions to help address contamination at the Site, including, to-date:

- Conducting comprehensive environmental studies since 1995, culminating in the RI/FS and accompanying human health and ecological risk assessments for the entire Site;
- Performing several removal actions, including the removal of a tar well from the former MGP Site, installing and operating a NAPL and groundwater extraction system for the Copper Falls aquifer, and removing NAPL-impacted soil and installing/operating a NAPL extraction system at the former ravine's mouth; and
- Reimbursing EPA and WDNR for oversight and response costs.

However, there are other parties who have CERCLA PRP status due to their status (*e.g.*, as owners, operators, arrangers, transporters) and their contribution to Site contamination (*i.e.*, release of hazardous substances). Statements in the PRAP such as those listed below overstate the role of former MGP operations in Ashland site contamination and, although mention, do not fully acknowledge other significant sources of NAPLs and PAHs at the Site, such as wood treating, rail operations, and City releases.

- "The former manufactured gas facility...created much of the pollution on the site" (p. 1, photo caption).
- "The site is contaminated with waste tar from a former manufactured gas plant (MGP)..." (p.1)
- "Contamination at the site was primarily generated by the former MGP..." (p. 4)
- "Possible wood treatment at local sawmills...may have transported contamination to the bay" (p.4).
- "Expansion of the former municipal wastewater treatment plant...may have transported contamination to the bay" (p. 4).
- "Some contaminated areas also contain wood debris and other solid waste from former lumber mills and an open dump that once operated on what is today Kreher Park" (p. 1).
- "Later, after Kreher Park was filled in, additional pipes and a ditch may have conveyed waste from the "coal tar dump" to the bay" (p. 4).

These statements also conflict with statements made elsewhere in the PRAP as well as the position advanced by the State of Wisconsin and Wisconsin Department of Natural Resources (WDNR) on this subject (Paragraph 3(e), Stipulation and Order for Judgment - Ashland County Circuit Court Case No. 04-CV-118, March, 2009):

> "[T]he State and WDNR acknowledge to the public and to the United States Environmental Protection Agency that NSPW, or its predecessor, affiliated companies or parent company, are not responsible for all of the discharges of hazardous substances detected at the NSP/Ashland Lakefront Site and that a portion of those discharges was caused by the activities of others."

As detailed in NSPW's June 20, 2006 *Ashland/NSP Lakefront Site PRP Investigation Report* and its Addenda (May 30, 2007 and July 9, 2008; incorporated herein by reference), these PRPs include, but are not limited to, the following (see also Figure 8.1, below):

Schroeder Lumber Company

- Schroeder Lumber Company owned and operated the Kreher Park portion of the Ashland site from 1901 to 1939 as a large wood processing facility that included a sawmill, a kiln, oil houses, and an unpressurized wood treatment tank. Other wood mills preceded Schroeder Lumber here dating back to c. 1884. The chemicals used for wood treating, such as creosote, diesel fuel, and tar, are consistent with the Site impacts (*e.g.*, NAPL and PAHs) that are at issue here. The presence of a significant amount of wood waste in the bay sediments alone exacerbates cleanup costs.

City of Ashland

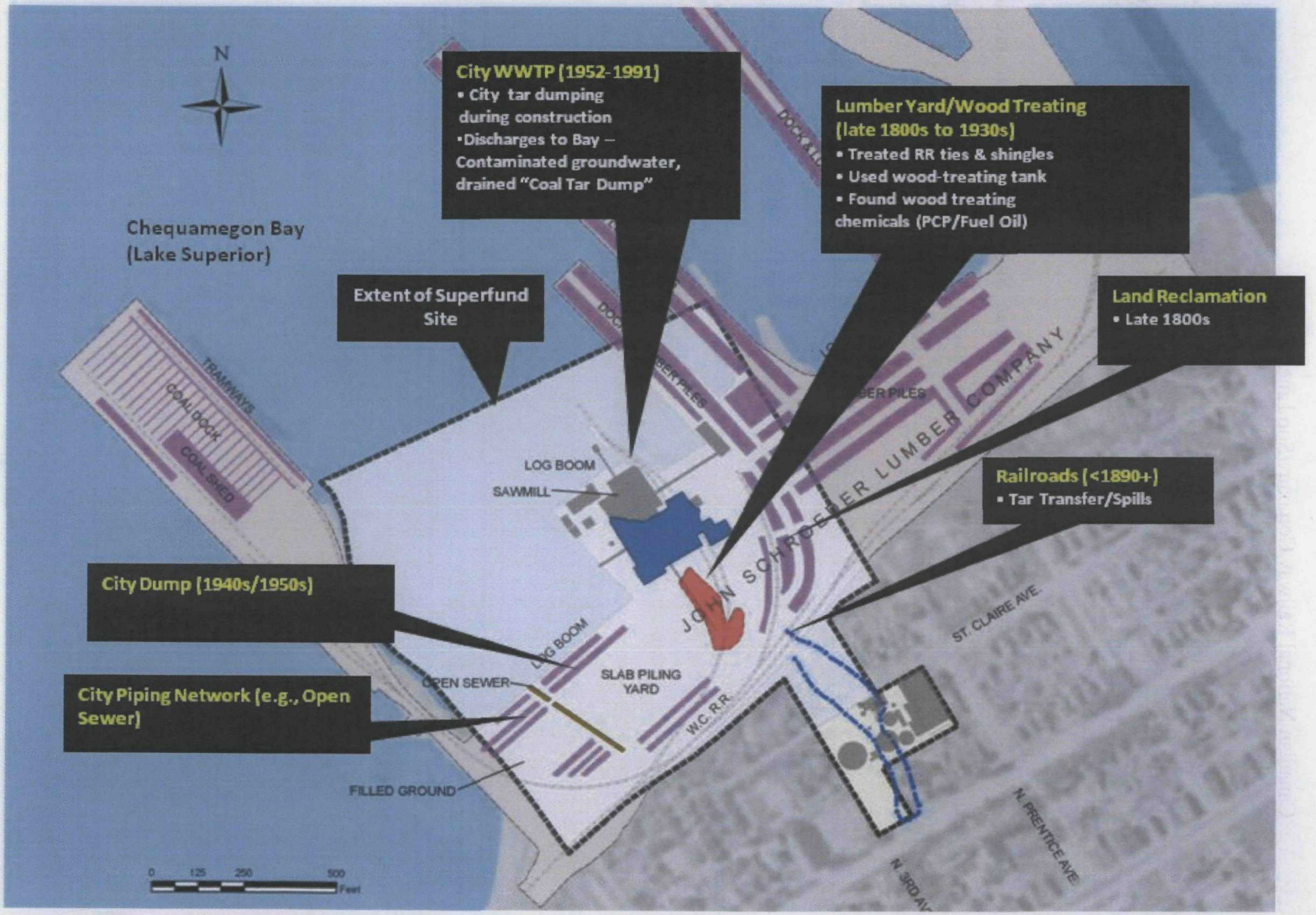
- The City of Ashland has owned and operated Kreher Park from 1942 to the present. Actions by the City or its agents that caused contamination include the following:
  - Maintained an open dump starting in the 1940s;
  - Dumped tar on-site from 1980s Ellis Avenue extension work;
  - Pumped contaminated groundwater to the bay in the 1990s;
  - Drained the "coal tar dump" to the bay during the 1950s construction of the former WWTP; and
  - Maintained a discharge network, including an open sewer, to the bay.

Canadian National Railway Company/Soo Line Railroad

- Canadian National Railway Company/Soo Line Railroad owned and operated a rail line running along the southeast boundary of Kreher Park. This rail line historically transported tar, and releases of tar during transfer occurred. Railroad ties were treated by dipping at Schroeder Lumber Co., possibly in joint venture with these railroad companies.

NSPW's further comments on these PRPs' roles in Site contamination are provided below. Additionally, 104(e) responses and attachments that have not yet been fully reviewed may contain additional information about these other PRPs and other sources of contamination.

Figure 8.1 – Other Sources of PAH and NAPL



8.1 The PRAP does not Fully Acknowledge Schroeder Lumber's Wood Treating Operations as a Contamination Source

In the PRAP (p.4), EPA notes the possibility that wood treatment at local sawmills "may have transported contamination to the bay." The existence of wood treatment operations is indisputable and the role that these operations played in causing Site contamination is a reality—not simply a possibility.

The surviving factual record (NSPW, 2006, 2007, 2008) confirms the John Schroeder Lumber Co. ("Schroeder Lumber") treated wood in the Kreher Park area as part of its large[19] wood mill operations. Forensic studies (NewFields, 2006) of Kreher Park and Bay sediments revealed the presence of environmental contamination diagnostic of wood treating. Throughout the nation, EPA has identified many wood treatment sites for remediation,[20] and EPA guidance recognizes that wood treating operations, such as those performed by Schroeder here, can cause significant and distinct patterns of environmental contamination, which include NAPL and PAHs. The City's own environmental consultants (SEH, MSA, Northern Environmental) described wood treatment as a source of Kreher Park contamination.

The Schroeder Lumber owned and operated its wood processing facility in the Kreher Park portion of the Site from 1901 to 1939, including a sawmill, planing mill, lathmill, a wood treatment facility, oil houses, a kiln, a refuse burner and other facilities associated with its wood processing facility (NSPW, 2006). Schroeder Lumber's operations were extensive and responsible for the significant volume of wood waste debris present in the sediments of the bay inlet portion of the Site. Schroeder Lumber produced finished lumber and treated railroad ties, commercial dock pilings, roof shingles and cedar posts.

Schroeder's articles of incorporation clearly stated that wood treating was part of its business,

> "...***manufacture and deal in preservative chemicals, to own and operate wood preservation plants*** and plants for the manufacture and utilization of wood byproducts, to explore and develop lands for gas, minerals, ores and oils, and to collect, work, use, and ***treat any timber*** and all forest and other vegetable products" (NSPW, 2006, emphasis added).

[19] The Ashland mill's average annual output was 75 million board feet of lumber valued at two million dollars (Bell, 1999).
[20] By December 1996, EPA had listed 71 wood preserving sites on the Superfund National Priorities List (US EPA, 1997). As of the early 1990s, EPA was evaluating another 85 sites for RCRA corrective action and had estimated that hundreds of other abandoned wood preserving sites existed (US EPA, 1992, 1990).

Eyewitness accounts and deposition testimony describe the wood treatment operations and numerous anecdotal accounts indicate that wood treatment activities occurred (NSPW, 2008). These accounts confirm that a creosote pit(s) and/or aboveground storage tank(s) were used for treating railroad ties and poles at Schroeder Lumber. This was area was described by the City's engineers, Greeley and Hansen, as a "coal tar dump" on a 1951 engineering drawing, and is referred to as such in the PRAP, but it is more accurately described as a wood treating tank or pit:

- Accounts of the 1920s and 1930s described an aboveground wooden plank structure approximately 4 ft deep used for dipping railroad ties (Parent, 1995; Roy, 1999; Selner, 1999).
- A wood treating pit, described alternately as an "ankle-to-knee" deep "pond"/"large area"/"low spot", was present in the wooden tank's location in the 1940s and 1950s (Walters, 1995; Boyle, 2005, pp. 33-7; Larson, 2005, pp. 20-1; Parent, 2001, pp. 10-1; Kabasa, 1995; Veno, 1995).
- During Schroeder Lumber's operations, railroad ties and shingles were treated in creosote troughs and finished lumber was stacked throughout the lowland Kreher Park area (Boyle, 2005, p. 30; Kabasa, 1995; Kucinski, 1998; Nelson, 1995; Parent, 1995; Parent, 2000).
- By 1952, a decade after Schroeder Lumber went bankrupt and the City acquired Kreher Park, "the structure was gone, but...the creosote was still there" (Parent, 2001, pp. 21-2).

Additional historical documentation of wood treating operations is provided in the PRP Investigation Report and its Addenda.

WDNR's documentation generated throughout its investigation of the Site confirms the anecdotal references to historic wood treatment activities at the Site (NSPW, 2006). EPA's Hazard Ranking System ("HRS") scoring packet also refers to the historic wood treatment activities as a source of contaminants at the Site. EPA's NPL Characteristics Data Collection Form for the Site identifies former "wood preserving/treatment" as an activity at least partly responsible for the principal contamination at the Site. Additionally, "Wood/ Lumber Treatment" is identified on the form as a source of waste disposal resulting in the principal Site contaminants (Ibid).

In its review of wood treating sites, the US Office of Technology Assessment (OTA, 1995, p. 10) observed that "[t]he preservatives PCP and creosote are found as contaminants, alone or in combination, at nearly all abandoned wood treated sites in the United States." The primary contaminants associated with wood treating sites include (OTA, 1995; US EPA, 1997, 1995, 1992):

- PAHs, which comprise up to 85% of creosote;
- Pentachlorophenol (PCP) and other chlorophenols;
- Dioxins and/or furans, found as impurities in PCP;
- LNAPL (PCP with its carrier oils) and DNAPL (mixtures of creosote and PCP); and
- Various metals, especially arsenic, chromium, copper, and zinc.

EPA guidance recognizes that wood treating operations, such as that performed by Schroeder Lumber here, generated a large number of solid-, liquid-, and vapor-phase wastes that "often left behind widespread soil, sediment, sludge, and water contamination" (OTA, 1995, p. 5).

> ***After [wood] treatment, the wood was removed from the pressure chamber and allowed to drip dry outside, resulting in large volumes of contaminated soil.*** Other treatment wastes include wastewater and sludges. Wastewater was generated as a condensate in the treatment process and also by rinsing tanks and equipment... wastewater was often spread onsite or stored in evaporation ponds. ***An oily sludge gradually accumulates in wastewater evaporation areas and also in treatment cylinders and storage tanks. This sludge was historically dumped into unlined pits onsite. Sludge pits found at wood treating sites can contain very high concentrations of the preservative chemicals, which may limit treatment options for these areas.*** (OTA, 1995, p. 10, emphasis added)
>
> ***Drips and spills during the oil borne preservative process may occur*** during chemical delivery, chemical storage and mixing, freshly-treated wood storage on bare ground (if RCRA guidelines are not followed), and dry-treated wood storage on ground...Wood preserving facilities generate wastewater during the conditioning of the...Rainwater, spills collected from the area around the treatment cylinder, and drip pad wash down water also contribute to wastewater volume. (US EPA, 1995, p. 32, emphasis added)
>
> ***Sludges containing sawdust, wood chips, sand, soil, stones, tar, and emulsified or polymerized oils accumulate in the bottom of wood treatment cylinders and tanks.*** Similar materials accumulate in holding, work, storage, or mixing tanks. Drippage, spillage, accumulations of debris in sumps, and residues from treatment processes that employ filtration can generate solid wastes. ***Historically, these solid wastes were dumped in unlined, earthen pits. These pits have become major sources of groundwater contamination***, since the wastes migrate through the soil into aquifers. After wood is treated, some unabsorbed preservative adheres to the wood surface. Excess preservative from pressure-treated wood will exude slowly, dripping from the wood. Rain can carry off preservative from treated wood. ***Large volumes of soil in storage areas have been contaminated by drippage from treated wood.*** (US EPA, 1992, p. 2-9, emphasis added)

The types and patterns of soil and groundwater contamination found at Kreher Park and in Bay sediments confirm wood treating occurred at Kreher Park. While the former MGP may have supplied

feedstock tar for wood treating,[21] there are multiple lines of environmental forensic evidence that confirm releases from wood treating occurred:

1. **Treated Wood Was Found in the Lumber Yard/Wood Treating area** – A high proportion (2-19%) of tar-impregnated (*i.e.*, treated) wood was found frequently in samples collected from this area (10 of 12 samples) and within a buried pipe (4 of 4 samples) which may have drained this area. This confirms this area was used for wood treatment.

2. **Wood Treating Additives, including diesel, pentachlorophenol, and creosote, were found in Kreher Park**

- Diesel, which is often used as carrier for wood treatment, was found frequently in Kreher Park mixed with tar. Raw diesel was also found in the Lumber Yard/Wood Treating area.
- PCP was frequently detected in Kreher Park (23/62 samples). PCP was used in wood treatment for its antiseptic virtues. The concentration of PCP increased proportionally with tar-derived PAHs, especially in the "Coal Tar Dump" and within the buried pipe. This is consistent with its use as a wood preserving fluid additive.
- Creosote, commonly used as a wood preservative, was found within the City Dump area.

8.2 The PRAP Fails to Acknowledge Former Rail Operations as a Contamination Source

EPA recognized the presence of railroad operations – "a railroad corridor owned by Wisconsin Central, Ltd., part of Canadian National Railway (CN)" (US EPA, 2009, pp. 2-3) – but not its role in Site contamination. The predecessors to CN owned and operated a rail corridor along the base of the bluff face at the Site, as well as rail sidings that serviced the Lakefront industrial area, including Schroeder Lumber. These rail lines and sidings are depicted on historic Sanborn maps and recalled by eye witnesses. As described in the PRP Investigation Report and Addenda (2006, 2007, 2008), there is evidence that the railroad may have been in business with or engaged in some other financial arrangement with Schroeder Lumber.

There are also eye witness accounts that confirm the linkage between the railroad operations and those of Schroeder Lumber and depict how these operations contributed to the contamination at the Site.

[21] Carbureted water gas tar was used in wood treatment at the time Schroeder operated, as documented in contemporaneous literature, such as Mathers, 1913 "Water Gas Tar as a Wood Preservative," published in *The Journal of Industrial and Engineering Chemistry*. This is consistent with chemical fingerprinting results (New Fields, 2006), which showed that most of the tar in the "Coal Tar Dump" was derived from a single source.

These accounts describe historic railroad activities at the Site as transporting and releasing tar, oils and other hazardous substances at the Site and in the course of servicing the lumber mill operations (NSPW, 2006). These witnesses observed:

1. The railroad dumping oil, tars or tar-like materials and other hazardous substances across the shoreline area where the tracks ran;
2. The presence of a rail tank car periodically parked near a housing/manifold system to support product delivery lines at the bluff face;
3. Tar present within and at times overflowing tank cars; and
4. The railroad utilizing portions of the Site as a dump area during the City's operation of an open dump (described in Section 8.3, below).

Notwithstanding these historic operations and evidence of releases caused by the railroad, the PRAP does not specifically identify the railroad activities as a source of contamination at the Site.

8.3 The PRAP Fails to Acknowledge the City's Contribution to Site Contamination

The City of Ashland, the current owner of Kreher Park, acquired much of the property by 1942 (NSPW, 2006). Starting in the late 1800s and continuing throughout the 1940s and 1950s, the western portion of Kreher Park was used as an uncontrolled dump for wastes including solid, municipal, construction and demolition, and industrial materials. The City of Ashland's waste disposal practices consisted of open dumping of waste materials directly into the bay of Lake Superior or into the ravines that transected the lakefront area running south to north. Evidence of these historic operations includes historic Sanborn maps, photos, witness recollections, an 1890 lithographic depiction of the Ashland Lakefront, and WDNR documents referring to the area as an old landfill (see Exhibit 8 of the PRP Investigation Report). Test pitting in the City dump area during the RI encountered debris and fill, as well as NAPL-derived sheens and PAH contamination (NSPW, 2006).

The City's activities at its WWTP also contributed to the contamination. Beginning in 1951, the WWTP was constructed and operated as the City's sewage treatment facility until 1989. The City constructed a significant expansion of the facility in 1973. The City's construction and expansion activities resulted in the discharge of tars from the former wood treatment operations. Those familiar with these activities stated that wood debris, creosote, and creosote-saturated materials were excavated for the projects and disposed of just outside the perimeter of the WWTP (NSPW, 2008). Others recalled the

pumping of contaminated groundwater, which collected in the basement of the former WWTP, directly into the bay without any treatment (NSPW, 2006).

The initial construction of the WWTP also led to the City constructing a culvert from what was labeled by the City's engineers in the early 1950s as "Coal Tar Dump," but most likely contained wood treatment residuals from wood treatment conducted over the prior decades, to the bay. Sediments near the former WWTP and the depicted culvert outfall are heavily impacted with PAHs and NAPL. A steel culvert was found in this general area during test pitting investigations (NSPW, 2006). Although EPA acknowledges in the PRAP that "construction and expansion of the former municipal treatment plant in what is now Kreher Park, may have transported contamination to the bay" (p. 4), EPA does not elaborate on this significant conduit of contamination and the City's responsibility for it.

There is also evidence that the City disposed of tars in Kreher Park. During the mid-1980s, the northern extension of Ellis Avenue was completed. During excavations associated with that project, the City encountered tar contaminated soils, which it excavated, loaded, transported to and dumped at Kreher Park (Exhibit 8 of the PRP Investigation Report).

Use of the Bay as a marina with boat slips and fuel and dock facilities also likely contributed PAHs and NAPL to the Bay. As noted by the US Army Corps of Engineers with respect to the Ashland Harbor: "Ships and recreational boats contribute oils, greases, organic material, nutrients and heavy metals to the waters of the harbor. These materials can settle to the bottom and become mixed with and incorporated into the bottom sediment" (NSPW, 2006).

To summarize, the City's action/inaction caused or contributed to an actual release of hazardous substances at the Site by:

1. Operating an uncontrolled dump at the Site beginning in the 1940s;
2. Constructing in the 1950s and expanding in the 1970s the former WWTP at the Site;
3. Transporting to and disposing contaminants at the Site excavated during the extension of Ellis Avenue in the mid-1980s;
4. Pumping contaminated water from the WWTP to the bay as late as 1997; and
5. Installing and maintaining surface and subsurface drainage features and transport mechanisms, such as open sewers and culverts, the result of which was to transmit contaminants from Kreher Park to the Bay.

Notwithstanding these historic operations and evidence of releases caused by the City, the PRAP does not elaborate on the City's activities as a source of contamination at the Site.

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Attachment A

Comparison of Occupational Fatality and Injury Risks for Sed-6 *vs.* Sed-4

Methods for estimating the occupational risks of worker fatalities and injuries have been published by Leigh and Hoskin (1999), Hoskin *et al.* (1994), and Cohen *et al.* (1997). These methods rely upon actuarial statistics of worker fatalities and injuries published by the Bureau of Labor Statistics (BLS). In contrast, the baseline human health risks are the *hypothetical* health risks associated with exposure to site-specific contaminants.[1]

To estimate the occupational risks for the sediment remedial alternatives Sed-4 and Sed-6, it is necessary to estimate the labor (hours) required for each alternative. For each of the remedy components for these alternatives, URS prepared estimates of the labor required based on the cost estimates presented in the Feasibility Study (FS) report (also prepared by URS). Note that each of these remedial alternatives has a "contingency" cost of 20% applied to the remedial costs to account for uncertainty in the costs (excluding engineering and oversight, which are separate line item costs). To account for this contingency, the labor associated with the "base" cost of each alternative was increased by a total of 20% and added to the respective "base" labor allocation to each line item in proportion to the fraction of overall labor for each individual component. Table A.1 summarizes the labor estimates for Sed-4 *versus* Sed-6.

Occupational fatalities and injury rates vary depending on occupational labor categories. The labor categories we used correspond to the Means Labor categories and parallel those used by Hoskin *et al.* (1994) and Leigh and Hoskin (1999). Occupational fatalities, injuries, and employment statistics were obtained from the BLS (2009).

Fatality and employment job categories were matched by occupation code to obtain an annual fatality rate per 10,000 workers by job category as follows:

$$\text{Fatality Rate [per 10,000]} = \frac{\text{Total Fatalities}}{\text{Total Employed}} \times 10{,}000$$

Occupational fatalities and employment by labor categories were based on BLS 2003 data (which contain data for both components).

The BLS typically publishes injury statistics by industry, rather than occupational categories. A 2004 BLS Report published injury statistics by broad occupational categories, as well as those occupational categories with the leading injury rates, some of which are those required for the Record of

[1] Note that this is the risk of contracting cancer, not mortality from cancer. In contrast, the fatality risk is the chance of mortality due to a work-related accident.

Decision (ROD) remedy. Using these data, injury rates by job category were calculated in a manner similar to the fatality rates:

$$\text{Injury Rate [per 10,000]} = \frac{\text{Total Injuries}}{\text{Total Employed}} \times 10{,}000$$

The fatality and injury rates are summarized in Table A.2. As this summary shows, the incidence rates vary by job category, with the transportation and construction laborer categories carrying the highest risks.

Following the method of Hoskin *et al.* (1994), multiplying the annual fatality or injury rates for each job category by the percentage of labor hours required for each, gives the weighted average fatality or injury rate. This total weighted fatality rate was 2.5 per 10,000 workers per year, which is similar to the value of 3.5 per 10,000 developed by Hoskin *et al.* (1994). Hoskin's value is higher primarily due to the fact that the Hoskin *et al.* estimate is based on a hypothetical remedy involving a far higher percentage of hours associated with transportation, 80% compared to the estimate here of 18%.

Injury rates are nearly 100-fold higher than death associated with accidents, which is not a surprising result. Some fraction of the injuries is considered "disabling," whereas others are associated with sickness or other health-related issues. The BLS statistics do not separate disabling injuries, so it was not possible to quantify the distinction between disabling and non-disabling injuries.

A summary of the short-term risks associated with Sed-4 *versus* Sed-6 is provided in Table A.3. Following the method of Leigh and Hoskin (2000), the probability of at least one fatality (P) is estimated using a Poisson distribution, where the probability is given by $P = 1 - e^{-\mu}$, where μ is the risk of fatality.

Table A.1
Labor Hour Estimate Summary Sheet
Ashland/Northern States Power Lakefront Superfund Site, WI

Alternative Sed-4	**Cost**	**Labor**	**Labor**	**Contingency**	**Totals**		**Labor Category assigned**
	($)	**(hrs)**	**(% of total)**	**(hrs)**	**(hrs)**		
Mob/Demob & Miscellaneous	$2,400,000	32,100	16%	7,780	39,880	11.1%	Construction Laborer/Equip Operator
Dredge & Sediment Handling	$19,500,000	92,500	46%	22,420	114,920	32.0%	Construction Laborer/Equip Operator
Water Treatment	$10,100,000	6,000	3%	1,454	7,454	2.1%	Chemist
Transport and Disposal	**$4,400,000**	**52,000**	26%	12,604	64,604	18.0%	Trucking
Long-Term Monitoring	$700,000	17,500	9%	4,242	21,742	6.1%	Chemist
Subtotal		**200,100**					
Engineering @ 15%[1]	$5,500,000	48,500			48,500	13.5%	Engineer
Oversight @ 15%[2]	$5,500,000	61,800			61,800	17.2%	Foreman
Contingency @ 20%[3]	$7,300,000			48,500			
Totals	**$55,300,000**	**310,400**		**48,500**	**358,900**	100%	
Alternative Sed-6	**Cost**	**Labor**	**Labor**	**Contingency**	**Totals**		**Labor Category assigned**
	($)	**(hrs)**	**(% of total)**	**(hrs)**	**(hrs)**		
Mob/Demob & Miscellaneous	$2,600,000	41,900	17%	10,326	52,226	11.7%	Construction Laborer/Equip Operator
Dredge & Sediment Handling	$28,100,000	109,700	45%	27,035	136,735	30.7%	Construction Laborer/Equip Operator
Water Treatment	$9,600,000	14,100	6%	3,475	17,575	3.9%	Chemist
Transport and Disposal	**$5,200,000**	**63,100**	26%	15,551	78,651	17.7%	Trucking
Long Term Monitoring	$700,000	17,500	7%	4,313	21,813	4.9%	Chemist
Subtotal		**246,300**					
Engineering @ 15%[1]	$6,800,000	60,700			60,700	13.6%	Engineer
Oversight @ 15%[2]	$6,800,000	77,400			77,400	17.4%	Foreman
Contingency @ 20%[3]	$9,100,000			60,700			
Totals[4]	**$69,000,000**	**384,400**		**60,700**	**445,100**	100%	

Notes: *1 = 67% of the cost was assumed to be labor at $75/hour for the Engineering labor hour estimate*

2 = 85% of the cost was assumed to be labor at $75/hour for the Oversight labor hour estimate

3 = 50% of the cost was assumed to be labor at $75/hour for the Contingency labor hour estimate

4 = Option 6 work items that account for the higher cost and labor hours as compared to Option 4 includes installing land-side sheet pile walls, constructing and operating the groundwater collection trench system, installing the wave attenuator, and excavating the near-shore sediments in a relatively dry state.

Table A.2
Comparison of Occupational Fatalities and Injuries for Sediment Remediation Alternatives
Ashland/Northern States Power Lakefront Superfund Site, WI

Labor Remedy[a]			Fatal Occupational Injuries in US (2003)				Non-Fatal Occupational Injuries in US (2004)				Fatalities / Injuries By ROD Labor Category	
Occupational Category[b]	**Estimated Labor Hours**	**Percentage distribution of hours**	**Occupation Code[c]**	**Total Employed**	**Annual Fatalities**	**Annual Fatality Rate (per 10,000)**	**Occupation Code**	**Total Employed**	**Annual Injuries**	**Annual Injury Rate (per 10,000)**	**Fatalities (per 10,000)**	**Injuries (per 10,000)**
		(1)				(2)				(3)	(1) x (2)	(1) x (3)
SED-4												
Civil Engineer	46,657	13%	17-2051	211,280	4	0.19	17-0000[d]	2,385,680	6,960	29.2	0.0246	3.79
Field Chemist (technician)	25,123	7%	19-4031	61,870	4	0.65	19-0000[d]	1,144,240	3,130	27.4	0.0453	1.91
Foreman	61,013	17%	47-1011	518,660	112	2.16	47-0000[d]	6,303,180	144,050	228.5	0.3671	38.85
Construction Laborer	78,958	22%	47-2061	845,890	290	3.43	47-2061	892,940	37,930	424.8	0.7542	93.45
Equipment Operator	82,547	23%	47-2073	343,600	63	1.83	47-0000[d]	6,303,180	144,050	228.5	0.4217	52.56
Truck Driver (heavy/trucks)	64,602	18%	53-3032	1,520,740	722	4.75	53-3032	1,594,980	63,570	398.6	0.8546	71.74
Totals	**358,900**	**100.0%**		**3,502,040**	**1,195**	**3.41**		**18,624,200**	**399,690**	**214.61**	**2.5**	**262.31**
Equivalent Worker Years (8 hr/day, 250 days/yr)	**179**									**Expected Fatalities/Injuries for Remedy:**	**0.044**	**4.71**
General Construction and Extraction Occupations			47-0000	6,099,360	1,038	1.7	47-0000	6,303,180	144,050	228.5	0.031	4.101
Transportation and Material Moving Occupations			53-0000	9,361,690	1,393	1.5	53-0000	9,597,380	257,210	268.0	0.027	4.809
SED-6												
Civil Engineer	46,657	13%	17-2051	211,280	4	0.19	17-0000[d]	2,385,680	6,960	29.2	0.0246	3.79
Field Chemist (technician)	25,123	7%	19-4031	61,870	4	0.65	19-0000[d]	1,144,240	3,130	27.4	0.0453	1.91
Foreman	61,013	17%	47-1011	518,660	112	2.16	47-0000[d]	6,303,180	144,050	228.5	0.3671	38.85
Construction Laborer	78,958	22%	47-2061	845,890	290	3.43	47-2061	892,940	37,930	424.8	0.7542	93.45
Equipment Operator	82,547	23%	47-2073	343,600	63	1.83	47-0000[d]	6,303,180	144,050	228.5	0.4217	52.56
Truck Driver (heavy/trucks)	64,602	18%	53-3032	1,520,740	722	4.75	53-3032	1,594,980	63,570	398.6	0.8546	71.74
Totals	**445,100**	**100.0%**		**3,502,040**	**1,195**	**3.41**		**18,624,200**	**399,690**	**214.61**	**2.5**	**262.31**
Equivalent Worker Years (8 hr/day, 250 days/yr)	**223**									**Expected Fatalities/Injuries for Remedy:**	**0.055**	**5.84**
General Construction and Extraction Occupations			47-0000	6,099,360	1,038	1.7	47-0000	6,303,180	144,050	228.5	0.038	5.086
Transportation and Material Moving Occupations			53-0000	9,361,690	1,393	1.5	53-0000	9,597,380	257,210	268.0	0.033	5.964

Notes: [a] Overall Labor estimates provided by URS.

[b] Occupational Categories adopted based on those in Hoskin et al., 1994.

[c] Occupational codes from Bureau of Labor Statistics annual employment tables.

[d] No injury data available for particular labor category -- values used are for the occupation as a whole.
Occupation 2-digit prefix: 17 - Architecture and Engineering; 19 - Life, Physical, and Social Sciences; 33 - Protective Services; 47 - Construction and Extraction, 53 - Transportation and Material Moving.

Table A.3
Summary of Worker Fatality and Injury Risks for Sed-4 *vs.* Sed-6

Risk Category	Sed-4	Sed-6	Increased Risk
Risk of Fatality	4.4×10^{-2}	5.5×10^{-2}	23%
Probability of at Least One Fatality	4.3%	5.3%	23%
Estimated Number of Injuries	4.7	5.8	23%
Baseline Human Health (Chemical) Risk	1×10^{-5} (adult wader)		

For perspective, the human health risk of exposure to sediment-related contamination presented in the PRAP is 1×10^{-5}. Thus the actuarial risk of incurring a fatality during the remedy far exceeds the potential cancer risk associated with chemical exposure. Furthermore, chemical risks represent the risk of cancer, not death. If these risks are weighted by the "Years of Potential Life Lost," or YPLL, then the actuarial risks associated with worker fatalities are even more severe than the hypothetical cancer risks. In a paper by Cohen *et al.* (1997), a worker fatality is expected to result in 32.4 years of lost life (this is a function of the age distribution of workers), whereas cancer risks are expected to yield approximately 15 years of lost life (*e.g.*, cancers typically manifest themselves later in life). Thus, when viewed from the standpoint of which risk carries with it the largest decrease in expected lifespan, the worker fatality risk projected for the project, on average, is associated with a greater decrement in life expectancy (twofold decrease) relative to the risk of mortality from cancer.

The NCP requires an evaluation of alternatives relative to short-term effectiveness (*e.g.*, risks), yet no such analysis was performed in the PRAP. The PRAP indicates that both the Sed-4 and Sed-6 remedies are protective of human health and the environment, and both satisfy the NCP Threshold Criteria. Yet on the basis of the short-term effectiveness Balancing Criteria, the Sed-4 is clearly superior to the Sed-6 alternative. Thus, the selection of Sed-6 as the recommended remedy is contrary to the NCP and CERCLA.

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To conduct an evaluation of the potential for dispersion of volatile contaminants during sediment remediation, bench scale air emission testing and dispersion modeling were conducted on sediment samples collected from the Ashland/NSP Lakefront Superfund Site (Site). The testing protocol followed the United States Environmental Protection Agency (EPA)-approved Treatability Study Work Plan (URS, 2007). Results of this evaluation were presented in the Feasibility Study (FS) Report and considered in the selection of the preferred remedial alternative for sediment (URS, 2008). Emissions testing on the sediment samples were designed to simulate potential emission rates associated with dredging operations, sediment dewatering, and exposed sediment stockpiling.

The results of the bench scale emissions testing were used in air dispersion modeling to evaluate how volatilized contaminants would be dispersed under simulated remedial alternatives. In particular, modeling was conducted to determine whether human receptors outside of the immediate Site work zones would be exposed to volatile emissions that exceeded odor thresholds and/or risk-based air quality criteria during remedial activities. The EPA AERMOD model (version 07026) was used for this modeling assessment.

Since the dry excavation alternative (Alternative Sed-6) was added at the request of EPA later in the FS review process, air dispersion modeling of Sed-6 was not included in this initial evaluation in the FS. Under Alternative Sed-6 the area within approximately 200 ft of shore would be dewatered and dry excavated; areas further offshore would be dredged. Air dispersion modeling based upon the Sed-6 scenario has now been conducted following the same protocol as in the EPA-approved Treatability Study (TS) in Appendix B2 of the FS. This evaluation compares benzene emissions and odor dispersion for Sed-4 and Sed-6 alternatives.

Volatilization directly from exposed saturated sediment has been found to have a faster rate than volatilization that could occur from first dissolving volatile organic compounds (VOCs) from the sediment to the water and then from the water to air boundary. Dewatering a portion of the bay exposes the sediments and contaminants to the air and volatilization can occur as long as the area is exposed even if not actively being excavated. In addition for Sed-6, removing the overlying water for excavation does not dry out the sediments, which remain saturated during the excavation. A significant increase in emissions between saturated sediment and dredge area suspension was also measured in the Data Gap Report for the St. Louis River/Interlake/Duluth Tar Site (SERVICE, 2002) from sediments contaminated by coal tars that also contained benzene. Emissions data were tested for sediments with 45% solids representing *in situ* conditions of exposed sediment and 1% solids slurry representing the conditions

around a wet dredge. The benzene emission results were 307 $\mu g/m^2$-hr for the dredge simulation compared to 1,920 $\mu g/m^2$-hr for exposed sediment or approximately a sixfold increase in the short-term emissions rate. This increase is also apparent in the Ashland site sediment air tunnel testing in the TS when comparing the 1% mixed sediment emission benzene results that simulate the wet dredging activity to the exposed sediment emissions benzene test results. The results from the TS measured the emission rate for representing the wet dredging activity at 83,213 $\mu g/m^2$-hr compared to the exposed sediment emission rate of 141,457 $\mu g/m^2$-hr in Area 2/2A, a nearly twofold increase.

Emissions Modeling Methodology

In the FS, the modeling conducted for Alternative Sed-4 (dredging) was based on successive dredging of 100 ft × 100 ft "cells" at a rate of from one to four days for each cell. The portion of the bay to be remediated was divided into 42 cells and cell 15 (where benzene concentrations in sediment were greatest) was used as the active cell for the model. The model simulated active dredging in cell 15; the remaining 41 cells assumed that emissions were occurring at a background rate. In addition, in the initial evaluation of the emissions in the TS from the onshore work areas were included.

Modeling for the Sed-6 Alternative was based upon similar assumptions for the 42 cells in the remedial area. However, under the Sed-6 Alternative, 24 of those cells would be dewatered by removing the overlying water to facilitate dry excavation methods. Figure B.1 depicts the 24 dewatered cells in yellow/orange and the remaining 18 cells where sediments would be dredged in light green.

In this updated evaluation, modeled benzene emissions from each of the cells were calculated in a similar fashion as was originally done for Alternative Sed-4 in that the active cell (assumed to be cell 15) was used to simulate emissions from cells that would actually be dredged, 42 cells under Sed-4 and 18 cells under Sed-6. For the remaining 24 cells in the dewatered areas under Sed-6, emissions were based on volatilization from wet sediment not covered by water, a rate similar to what had previously been used for wet stockpiles onshore. Emissions from onshore activities, *i.e.*, dewatering and stockpile areas, were not included in this evaluation as they were assumed to be similar. The objective here is to compare the two different sediment removal methods and not to include the uncontrolled emissions on shore that may include some type of controls and different sediment treatment options. However, additional model runs were made to determine the aggregate impact to all receptor points within the model with similar

sediment treatment that excludes the on-site thermal treatment option. The modeled benzene emission rates for Alternative Sed-4 and Alternative Sed-6 are summarized in Table B.1.

This simulation was based upon modeling for benzene for both Sed-6 and Sed-4 alternatives and run for the maximum construction period of activity (May – October) so that maximum predicted concentrations could be calculated and compared. Additional model runs were made for the period of August to October to examine seasonal variability. Only the dredging and excavation operations were initially modeled to show a direct comparison. All of the modeling used the same five-year meteorological record from 2002 to 2006 for Ashland airport that was used in the TS.

To assess the potential impact from odors released during Alternatives Sed-4 and Sed-6, the results of the odor testing from the TS were applied to the modeling conducted for the two different remediation alternatives. These odors may be directly associated with the contaminants, *i.e.*, the volatilized contaminants cause the odor, or the odors may result from the release of natural materials such as hydrogen sulfide. Odor prediction is difficult given the tenuous nature of the scent and the differences in population perception to any given odor. Odor typically has a very short duration response time and therefore can be difficult to model with standard steady-state approximations, such as those used in AERMOD. However, modeling can identify the likelihood that detectable recognizable odors will be associated with certain remedial activities and this was the intent of the comparison. Values corresponding to the odor detection threshold (DT) were not used for this modeling effort and only the recognition threshold (RT) values were used. During the odor testing from the wind tunnel test in the TS, the odor testing assessor panel was required to select one of three forced responses – "guess," "detection," or "recognition." Since the greatest response to nuisance odors by the public will be from recognition, only the RT values were modeled for this comparison. A value of 1.0 odor unit (OU) RT represents the threshold when most people will recognize the odor. A value of 2.0 OU represents a concentration that is twice the RT. The maximum 1-hour OU values were modeled for the two remediation alternatives by converting to OU and using benzene dispersion modeling with a correction factor. This correction factor is based on the test results in the TS for Area 2A sediments for 10% mixed sample during the 2- to 6-hour timeframe for both benzene and RT OU. The RT value of 100 OU and benzene value of 80,519 $\mu g/m^2$-hr from this testing were used for calculating a ratio that was then used as the correction factor. The modeling results represent the odor plume areas for the alternatives without any onshore activities to allow direct comparison of wet dredging and dry excavation.

Results

Isoconcentration lines for 24-hour benzene concentrations were developed for both Sed-4 and Sed-6 Alternatives. A direct comparison of the $1/10^{th}$ TLV[1] value of 160 $\mu g/m^3$ for these two alternatives is provided in Figure B.2 showing the larger extent of the Sed-6 *vs.* Sed-4 Alterative impacts. As discussed above this comparison does not include the onshore activity emissions.

The inclusion of onshore activities in this evaluation is expected to increase both the magnitude and extent of the impacts. When emissions from onshore activities are included, the maximum 24-hour average benzene concentrations associated with the Sed-6 Alternative increase about 13% over the maximum 24-hour average Sed-4 Alternative benzene concentrations for all points within the modeled grid for the May to October modeled timeframe (five years of simulations). An even greater increase is found for running the model with a shorter period from August to October, during which timeframe there is an increase of nearly 45% in Alternative Sed-6 *versus* Alternative Sed-4 maximum 24-hour benzene concentrations. The reason for the difference in these two periods is that during the early summer months of May to July when air is warmer, there is more air mixing than during the cooler temperatures of August to October. Increased atmospheric mixing results in lower concentrations of benzene through dilution during the early summer period when compared to the August to October period of less mixing.

Odor levels were calculated for the 1-hour averaging periods as odor is more transient in nature and subject to shorter duration fluctuations. This modeled run excludes the onshore dewatering and related sediment processing to compare the odor plumes of the wet dredging and dry excavation options. The odor recognition threshold levels are graphically displayed in Figure B.3 for both Sed-4 and Sed-6. Only the 1 OU and 2 OU values are plotted in this figure. As can be seen, Alternative Sed-6 has a greater potential to cause odor dispersion over a larger area for both the 1 OU and 2 OU RT values. Considering the large and lengthy exposure of the sediment for the Sed-6 alternative, more frequent odor incursions are likely within the Ashland area *versus* the likely odor effects associated with Sed-4. The additional time of remediation of one to two or more years required for Sed-6 increases this potential for more odor incursions.

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[1] Benzene does not have a specific ambient threshold value; however, it does have an annual averaging period listed in the WDNR regulation (Table A, NR 445.07). The WDNR air toxic rule discusses the possibility of using a 10% adjustment to a Threshold Limit Value (TLV; benzene TLV is 1,600 $\mu g/m^3$) for a chemical listed with a 24-hour averaging period. Even though benzene is listed with an annual averaging period, because the activity periods are of a shorter-term nature it was thought that using 10% value of the TLV, or 160 $\mu g/m^3$, would be an acceptable approach at defining an impact threshold.

Conclusions

Based upon this evaluation, air quality impacts from Alternative Sed-6 are predicted to be more extensive than those from Alternative Sed-4. The impacts will likely affect a larger area and longer periods due primarily to the dewatered area where dry excavation will be conducted. In addition, engineering and performance controls needed to control emissions from a large dewatered area are much more complex. As an example, emissions from dredging can be controlled substantially by stopping or modifying dredging activities; however, stopping excavation activity will not stop volatile emissions from a large area of exposed saturated sediment. Under some conditions the only recourse for controlling exposure to elevated levels of volatilized contaminants or odors under the Sed-6 Alternative may be temporary evacuation of area residents and businesses. The potential for more exposure to benzene and odor incursions are also greater due to the increase in Site schedule for Sed-6 of one to two or more years.

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URS. 2008. "Feasibility Study-Ashland/NSP Lakefront Superfund Site." Ashland Wisconsin, URS Corp., December 5.

Table B.1
Ashland/NSP Lakefront Site – Modeled Benzene Emission Rates –
Alternative SED-4 and Alternative SED-6

Modeled Source ID	Alternative SED-4 Wet Dredge Benzene Emission Rate (g/m^2s)	Alternative SED-6 Dry Excavate Benzene Emission Rate (g/m^2s)
1	2.05E-05	2.85E-05
2	2.05E-05	2.85E-05
3	8.59E-06	1.20E-05
4	4.58E-05	6.39E-05
5	2.82E-05	3.93E-05
6	2.82E-05	3.93E-05
7	4.09E-06	5.70E-06
8	6.38E-05	8.90E-05
9	1.38E-04	1.93E-04
10	4.94E-05	6.90E-05
11	2.15E-07	3.00E-07
12	1.74E-05	1.74E-05
13	1.77E-05	1.77E-05
14	1.76E-05	1.76E-05
15	1.31E-04	1.59E-04
16	5.80E-05	8.09E-05
17	2.37E-05	3.31E-05
18	2.37E-05	3.31E-05
19	3.40E-05	4.74E-05
20	1.68E-05	2.34E-05
21	3.59E-07	5.01E-07
22	2.40E-07	2.40E-07
23	8.92E-06	8.92E-06
24	9.17E-06	9.17E-06
25	2.21E-07	2.21E-07
26	1.73E-06	2.41E-06
27	8.42E-07	1.17E-06
28	7.98E-05	1.11E-04
29	8.59E-05	1.20E-04
30	1.86E-05	2.59E-05
31	1.13E-07	1.13E-07
32	3.89E-06	3.89E-06
33	1.35E-05	1.35E-05
34	1.72E-05	1.72E-05
35	8.86E-05	8.86E-05
36	9.50E-07	1.33E-06
37	5.16E-05	5.16E-05
38	4.33E-06	4.33E-06
39	3.87E-05	3.87E-05
40	2.79E-05	2.79E-05
41	8.84E-08	8.84E-08
42	2.76E-07	2.76E-07
dewater	2.13E-04	2.13E-04
stockpile	3.93E-05	3.93E-05
dewater2	1.14E-04	1.14E-04

Figure B.1. Ashland/NSP Lakefront Site – Alternative Sed-6 Dry Excavate Cell and Activity Areas

Figure B.2. Ashland/NSP Lakefront Site – Comparison of Alternative Sed-6 and Alternative Sed-4-Benzene 1/10th TLV Concentration Lines of 160 µg/m^3

Figure B.3. Ashland/NSP Lakefront Site – Threshold Recognition Odor Units – Alternative Sed-4 and Sed-6

Attachment C

Ashland Memo, Technical Approach to Develop Performance Standards

Foth

Cedar corporation
Menomonie, Wisconsin

Memorandum

April 3, 2009

TO: Scott Hansen, U.S. EPA
Jamie Dunn, Wisconsin DNR
Bill Fitzpatrick, Wisconsin DNR
Omprakash Patel, Weston Solutions

FR: Jerry Winslow, Northern States Power Company
Steve Laszewski, Foth
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Scott McCurdy, Cedar Corporation
Mitch Evenson, Cedar Corporation

RE: Proposed Technical Approach Summary – Performance Standard and Cover Specifications for the Ashland/NSPW Lakefront Site

This memorandum outlines the proposed technical approach for the conservative design strategy used to develop the post-dredge Performance Standard and cover specifications at the Ashland/Northern States Power Company (NSPW) Lakefront site. This memorandum supplements the proposed approach outlined in the March 6, 2009 memorandum, and expands upon the Dredge Performance Decision Tree (Decision Tree) and Attachment A of that March 2009 document.

Design Basis

The Performance Standard is based on: removal of sediment to a specified target elevation, corresponding to the 9.5 mg/kg Preliminary Remediation Goal (PRG), and post-dredge sediment total PAH concentration protectively managed with backfill cover/habitat material placement. Ultimately, the goal is to develop numerical ranges in the Performance Standard and to design residual cover specifications that are protective of the benthic macroinvertebrate community.

The development of the Performance Standard and the design of the residual cover specifications relies upon published guideline documents from the U.S. Army Corps of Engineers, U.S. EPA, and the peer-reviewed scientific literature. This design process has been used successfully by the

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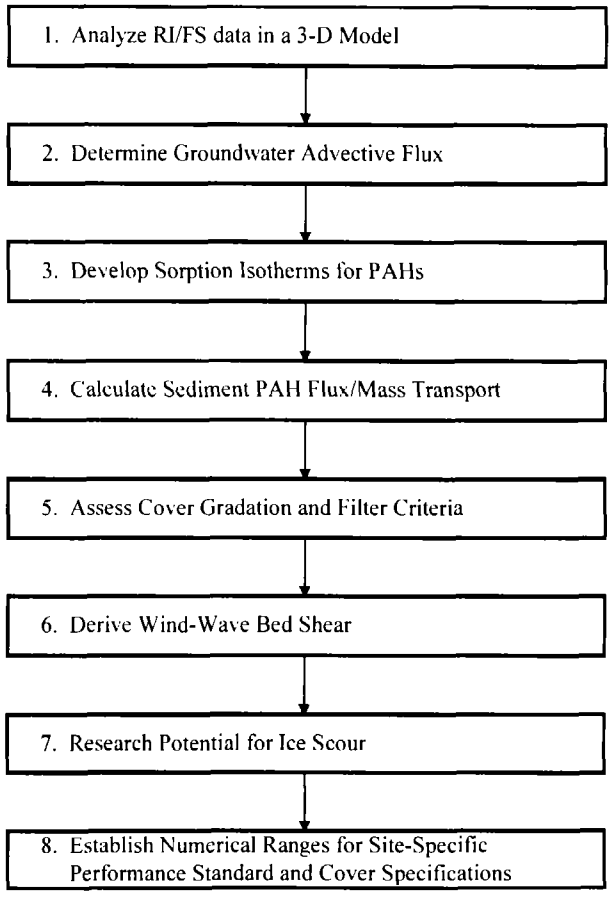
WDNR, U.S. EPA and Responsible Parties (RPs) at other locations within Region V (ERDC-EL 2008a, 2008b, GW Partners 2007, NRC 2007).

The following sequence of eight primary tasks summarizes the individual design elements being used to develop the Performance Standard and cover specifications (Figure 1). The remaining text provides details regarding the technical approach and references for a particular tasks.

Figure 1. Sequence of design tasks for Performance Standard and Cover.



A full design document summarizing the remedial design work will be submitted as part of the U.S. EPA Superfund process. This memorandum provides a summary of the design tasks.

1. Analyze RI/FS data in a 3-D model

Accurate 3-D delineation of sediments is crucial for sediment assessment and remediation. Therefore, sediment data from the complete Remedial Investigation/Feasibility Study (RI/FS) database, consisting of 531 total PAH measurements (tPAH) and other data such as boring logs, grain size, percent solids, etc., were entered into GMS-SED 6.5.2 software (Aquaveo, LLC). GMS-SED is a commercially available finite-element mesh model. The GMS-SED package of stratigraphy modeling and geostatistics tools can be applied for modeling contaminated sediment deposits, and ultimately for delivery or communication of the sediment removal prism to a dredging contractor. Figure 2 depicts the Ashland GMS-SED model triangulated irregular network (TIN) domain, which consists of nearly 2,300 nodes.

Figure 2. Ashland GMS-SED model domain.

The sediment RI/FS tPAH data were then interpolated throughout the 3-D model domain using a geostatistical kriging routine in GMS-SED. Concentrations of tPAH are therefore known within the full 3-D model domain (areal and vertical extent), which can subsequently be used to determine dredge surfaces, post-dredge water depths and post-dredge or residual tPAH concentrations. The GMS-SED 3-D model provides the framework within which the sediment remedial design is developed.

2. Determine groundwater advective flux

An analysis of groundwater advection is important to provide an estimate for the potential for upward migration of PAHs through the Chequamegon Bay. Output from the advection analysis is subsequently used as input into the sediment PAH flux/mass transport calculations (Task 4).

Contour maps of potentiometric surfaces were taken from Figures 3-8 to 3-13 of the RI report dated August 31, 2007. The figures do not provide details for the stratigraphy of the sediment bed, particularly how a clay confining unit interacts with the beach sediments (sands). However, there was a very shallow hydraulic gradient (at depth) identified towards the bay for reviewed periods (June 15, 2005 and November 3, 2005). The water table map (June 15, 2005) showed only a 1% slope in the water table near the shoreline. Therefore, the groundwater discharge to the bay is likely minor.

It would be impractical to develop a model to estimate upflow through the sediment bed at this stage. If significant upflow is present, it is likely localized in areas of more permeable base materials. Therefore, direct measurement of hydraulic conditions beneath the impacted sediments is recommended during future stages of work.

While upflow was found to be minor, some assessment of the impacts of upflow of varying magnitudes will be incorporated when evaluating sediment PAH flux/mass transport (Task 4) through post-dredge cover material.

3. Develop sorption isotherms for PAHs

The sorption of sediment-bound PAHs is an important component to understanding the potential transport of post-dredge residual PAH concentrations through the cover material. The process by which organic compounds such as PAHs distribute themselves between solid and solution phases is called partitioning. Sorption isotherms describe this relationship, and a general equilibrium isotherm for PAHs is the nonlinear Freundlich sorption isotherm

$$q = K_F(C_{pw})^n$$

Equation 1

Where: q = Total sediment PAH (mg/kg);
K_F = Isotherm coefficient (slope);
C_{pw} = Porewater concentration (mg/L); and
n = Isotherm coefficient (power)

The Freundlich sorption isotherm can be linearized, as shown in Equation 2:

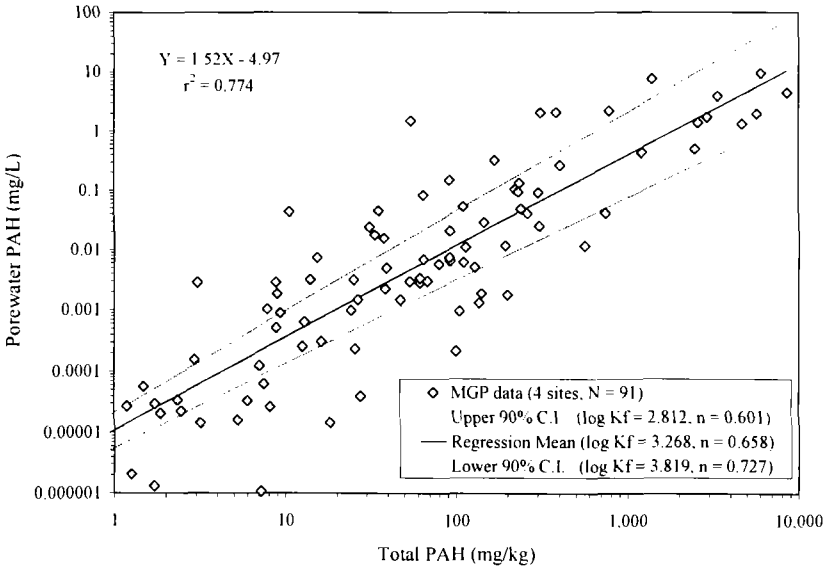
$$\log(q) = \log K_F + n\log(C_{pw})$$

Equation 2

A linear regression was used to determine the relationship between sediment total PAH and porewater measurements to derive an MGP Freundlich isotherm (i.e. K_F and n values). A data set of 91 sediment samples collected from four different MGP sites was used in the analysis.

The results of the regression fit and the 90 percent confidence interval for the slope and intercept were then used to develop the range in Freundlich isotherm coefficients (K_F and n). A plot of the regression fit is shown in Figure 3. These estimates were then directly input into Task 4.

Figure 3. Regression used to develop the Freundlich sorption isotherm.



4. Calculate sediment PAH flux/mass transport

Modeling for the post-dredge cover chemical isolation was done using numerical modeling for a diffusion-only case and for an advection-dispersion case to evaluate the maximum flux estimate of PAHs over time. Given that the PAH sediment-porewater partitioning is nonlinear, an analytical solution was not available. Instead, analytical solutions for linear partitioning were used to provide order-of-magnitude checks of the numerical solutions.

The diffusion-only model is a one-dimensional model, and was used to evaluate how different post-dredge cover thicknesses (e.g. 0.5 ft, 1 ft, 2ft, 3ft, etc.) provided a diffusive barrier, limiting the mass flux of the underlying sediment PAHs into the active benthic layer. Diffusion coefficients for the individual PAH compounds were taken from Eek et al. (2008). The mass diffusing is proportional to the gradient, and can be expressed using Fick's first law, in one dimension (Equation 3).

$$F = -D^{*}(dC/dx)$$

Equation 3

Where:
- F = mass flux of solute per unit area per time
- D^{*} = effective diffusion coefficient (cm^2/yr)
- C = solute concentration (g/cm^3)
- dC/dx = concentration gradient (g/cm^3/thickness in cm)

The selection of the effective diffusion coefficient (D^{*}) was first based on conservative selection of a molecular diffusion coefficient and consideration of tortuosity effects. The effective diffusion coefficient for the sediment was estimated to be 107 cm^2/yr.

Numerical modeling was conducted with Hydrus-2D software (PC Progress, Inc.). The Hydrus-2D program is a finite element model for simulating the movement of water, heat, and multiple solutes in variably saturated media (Simunek et al. 1999).

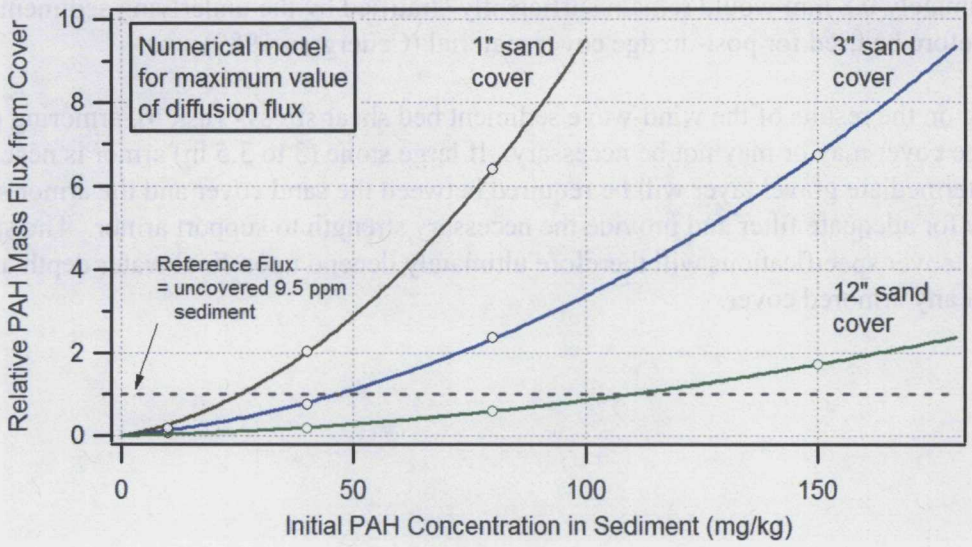
Numerical model estimates for PAH flux through a residual cover were made for various input levels, for initial sediment PAH concentrations of 10, 40, 80 and 150 mg/kg, and for cover thicknesses of 0, 1.0, 3.0, and 12.0 inches of sand. The maximum PAH mass flux from an uncovered (0-inch sand thickness) sediment with a PAH concentration of 10 mg/kg was considered a reference flux. Residual sand covers significantly reduced the modeled PAH mass flux relative to the reference condition. The effects of sand cover on the diffusion flux are shown in Figure 4. The model results show that the maximum flux from a 3-inch sand cover over residual sediment with a PAH concentration of 50 mg/kg is roughly equivalent to the flux from uncovered sediment with a PAH concentration of 9.5 mg/kg. For a 12-inch sand cover, residual sediment with a PAH concentration of 100 mg/kg is roughly equivalent to the flux from uncovered sediment with a PAH concentration of 9.5 mg/kg

A significant reduction in PAH mass flux as a result of sand covers is consistent with recent literature on the subject. For example, Eek et al. (2008) showed that 1 cm (0.4 in) of sand effectively reduced PAH mass flux from an Oslo Harbor sediment to only 3.5 – 7.3% of the uncapped sediments. Herrenkohl et al. (2001) provided a survey of field and lab studies which show effective chemical isolation, and, with the results of a lab study of consolidation over a PAH and NAPL-contaminated sediment from the Wyckoff / Eagle Harbor Superfund site,

showed that the sand effectively isolated PAH contamination away from the top 10 cm (the zone of sand normally considered the biologically active or bioturbation zone).

It is important to note that the results of modeling are conducted not to cover undredged sediment with high PAH concentrations, but to appropriately manage residual sediments that are likely to result from dredging using current best practices. In addition, considerations of effective isolation from advection and residual concentrations are best reviewed with respect to site specific conditions and effective implementation of the overall remedy.

Figure 4. Effects of Sand Cover on Diffusive Mass Flux from Residual Sediment



Summary of sediment PAH flux/mass transport evaluation:

- Sand cover effectively reduces sediment PAH flux to the benthic layer;
- Different sand cover thicknesses address variable post-dredge residual concentrations;
- Since sand cover effectively protects the benthic layer, the engineering design challenge is to insure that residual cover remains in place by assessing post-dredge bathymetry, cover gradation and filter criteria (Task 5), and accurately deriving wind-wave bed shear (Task 6).

5. Assess cover gradation and filter criteria

Gradation and filter details are necessary to insure that residual cover remains stratified over time and to prevent erosive losses from poorly matched post-dredge sediment and cover media.

The RI/FS sediment grain size distributions were evaluated using the method of moments (McBride 1971) to determine the 50^{th} and 85^{th} percentile values (d_{50} and d_{85}, respectively) in millimeters. The d_{50} and d_{85} for sediment samples collected at depths greater than 1 foot were determined to range from 0.1 to 0.2 mm and 0.2 to 0.4 mm, respectively.

Given these characteristics of the material at depth, it was determined that a sand cover with a d_{50} of approximately 0.8 mm would remain sufficiently stratified by the underlying sediment and could therefore be used for post-dredge cover material (Cedergren 1989).

Depending on the results of the wind-wave sediment bed shear stress (Task 6), armoring of the post-dredge cover may or may not be necessary. If large stone (3 to 3.5 in) armor is necessary, then an intermediate gravel layer will be required between the sand cover and the armor stone to both allow for adequate filter and provide the necessary strength to support armor. The specifics of the final cover specifications will therefore ultimately depend upon final water depth and the location of any armored cover.

6. Derive wind-wave bed shear

Numerical modeling and analyses to estimate peak bed shear stresses at the Ashland/NSPW Lakefront Site using the MIKE21 model in order to derive estimates of shear stresses due to wind-generated waves and circulation is underway. The goal of the wind-wave modeling is to evaluate a projected post-remedy bathymetric condition and estimate shear stresses under conservative wave and water depth conditions. Wind-wave bed shear estimates provide additional confidence in residual cover specification and placement.

MIKE21 is a commercial modeling system developed by the Danish Hydraulic Institute that has been widely applied by Baird at project sites both on the Great Lakes and worldwide. The specific modules to be applied will include the MIKE21 Spectral Wave (M21SW) model to simulate wind-wave growth, transformation and dissipation, and the MIKE21 Flexible Mesh Hydrodynamic (M21FM) model to simulate wind-induced current flow.

The numerical models will be run for the various test cases identified using the GMS-SED 3-D model using various post-dredge/cover bathymetric scenarios. Inputs to the M21SW model will consist of the bathymetric grid, and a steady-state wind speed and direction. The model will provide as output estimates of wave height, period and direction, as well as lakebed shear stress, throughout the model domain. The identical inputs will be provided to the M21FM model, which will produce as output estimates of water level variation, current speed and direction, and current-induced bed shear stress.

A scenario representing conservative wave and water depth conditions will be identified from the various test cases for use in subsequent modeling. These conditions will be checked relative to known site conditions, so the selected conditions are indeed appropriately conservative. Results of the wind-wave modeling will be used to evaluate selection of residual cover specifications determined through Tasks 1 through 5 above.

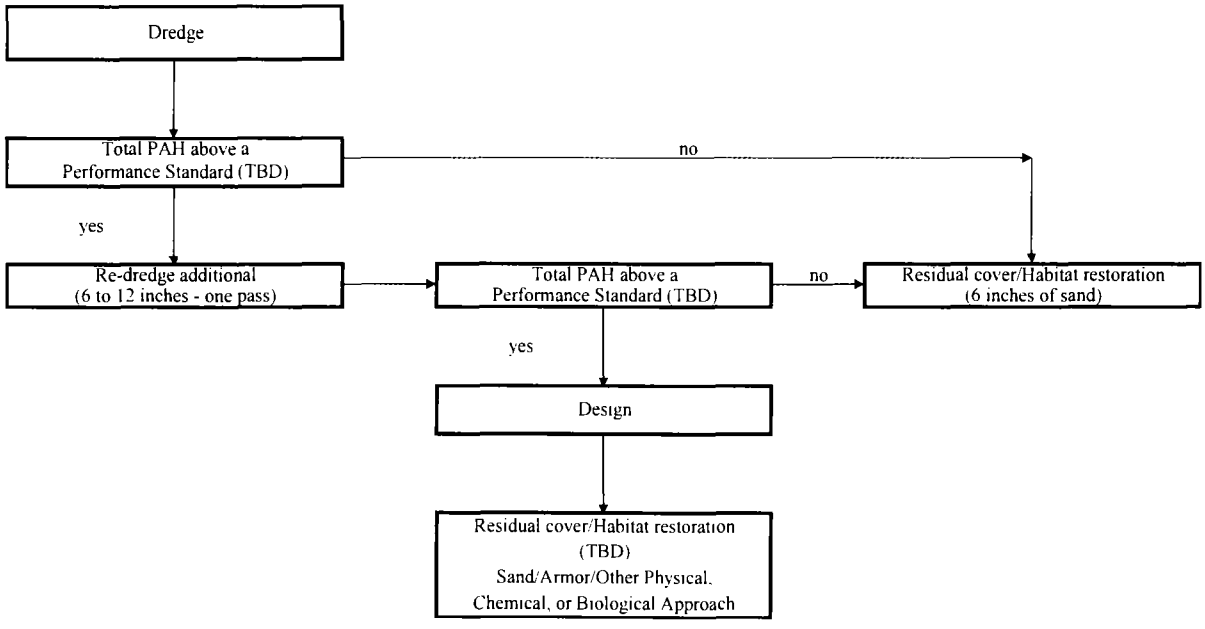
7. Research potential for ice scour

Seasonal freeze and thaw cycles of bay water can produce ice that may contact the post-dredge residual cover/habitat restoration layer. The probability of contact between ice and the remediated surface will be assessed in conjunction with determination of final water depth. Assessment will incorporate historical climatic variation and resulting ice thickness. Shoreline effects will be considered separately and used in design of final shoreline construction.

8. Establish numerical ranges for site-specific Performance Standard and cover specifications

The March 6, 2009, memorandum provided a proposed Dredge Performance Decision Tree, shown below as Figure 5 with the addition of the design element.

Figure 5. Proposed Dredge Performance Decision Tree



A key component of the Decision Tree is the link between the post-dredge tPAH Performance Standard and subsequent residual cover/habitat restoration or design decision. An adaptive management strategy which allows for a numeric range in the Performance Standard, derived using site-specific information and the rigorous, scientifically based methodology described above, is integral to selecting the appropriate sequence of steps within the Decision Tree.

Proposed next steps

The proposed next steps include:

- Meeting or call of a Work Group consisting of Agency and NSPW representatives to evaluate developing the March Technical Memorandums, this April Memorandum, the Performance Standard, and elements of the 2010 Pilot Project.

- Consensus between the Agencies and NSPW on the above technical approach for developing the Performance Standard.

- Conductance of specific work items to supplement the approaches.

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ATTACHMENT B

I. DNR/EPA CORRESPONDENCE

Note:
Northern States Power Company Wisconsin, d/b/a Xcel Energy, is herein referred to as "NSP"
Dames & Moore ("D&M"), n/k/a URS Corporation ("URS")
Michael Best & Friedrich LLP ("MBF")

Date	To	Prepared By	Document Description
3/2/1995	Musso, NSP	Dunn, DNR	Notice of Potential Responsibility for Soil and Groundwater contamination found on Kreher Park and NSP property.
3/24/1995	Meyer, DNR	MBF	Response to Responsible Party letter.
4/4/1995	MBF	L. Meyer, DNR	Re:NSP RP letter
4/5/1995	Dunn, DNR	Musso, NSP	Response to 4/3/95 letter
4/24/1995	Musso, NSP	Dunn, DNR	Conditional Approval of proposed scope of work requested by the RP letter.
4/26/1995	Dunn, DNR	Trainor, D&M	Conditional Approval Response
7/14/1995	Musso, NSP	Dunn, DNR	Comments to Site Investigation Report and Remedial Action Plan
7/27/1995	Dunn, DNR	DAC & LHB, MBF	Response to 7/14/95 letter
8/4/1995	Dunn, DNR	Trainor, D&M	Alternative Containment Design proposal.
9/22/1995	Musso, NSP	Dunn, DNR	DNR's comments to proposed interim remedial action.
9/25/1995	MBF	Johnson & Meyer, DNR	Response to 9/22/95 DNR letter
9/26/1995	MBF	Johnson, DNR	Confirms meeting agreements
9/29/1995	Musso, NSP	Dunn, DNR	Conditional approval of proposed interim action.
10/19/1995	MBF/NSP	Johnson, DNR	Re: work by NSP's consultant
10/30/1995	Johnson, DNR	MBF	Re: construction of the interim action
1/10/1996	Mayor, Ashland	LeRoy, DNR	Update re: DNR's activities at Kreher Park
3/1/1996	Dunn, DNR	Musso, NSP	Re: sediment sampling
3/4/1996	Dunn, DNR	Musso, NSP	Project on hold as a result of sampling conducted in 1995 which discovered additional contamination.
4/15/1996	Musso, NSP	Dunn, DNR	Further investigation needed surrounding the NSP property portion of the site.
4/30/1996	Dunn, DNR	Musso, NSP	Encl. Supplemental Site Investigation Work Plan and schedule and providing key considerations.
5/9/1996	Musso, NSP	Dunn, DNR	Conditional approval of Supplemental Investigation Work Plan.
5/30/1996	Dunn, DNR	Wilson, NSP	Encl. NSP's comments on SEH Draft Remediation Action Options Feasibility Study (D&M letter 5/28/96).
10/7/1996	Musso, NSP	Dunn, DNR	Approval of Proposed Work Plan - Deep Aquifer Investigation.
4/2/1997	Johnson, DNR	Wilson, NSP	SEH report available about 5/1/97; requests copy.
5/13/1997	Stokstad, DNR	Wilson, NSP	Re: Partnering relationship.

Date	To	Prepared By	Document Description
5/16/1997	Kulibert, DNR	Musso, NSP	NSP's comments to SEH Draft Comprehensive Environmental Investigation Report.
11/20/1997	Musso, NSP	Kazda, DNR	RP notification. Continued involvement in project is appreciated.
12/3/1997	Kazda, DNR	Wilson & Musso, NSP	NSP's response to 11/20/97 RP letters
1/20/1998	Musso, NSP	Stokstad, DNR	Re: negative reaction to RP notifications
1/27/1998	Musso, NSP	Stokstad, DNR	Re: multi-party settlement
2/4/1998	Musso, NSP	Dunn, DNR	Response to info submitted re: potential liability of City, WCL and Schroeder Lumber.
3/3/1998	Dunn, DNR	Musso, NSP	Re: summary of allocation team meeting
3/20/1998	Musso, NSP	Michaelsen, DNR	Notice of Violation
3/24/1998	Musso, NSP	Dunn, DNR	Re: Supplemental Investigation; definition of site.
3/25/1998	Michaelsen, DNR	Wilson, NSP	Response to Notice of Violation.
3/30/1998	Dunn, DNR	Muss, NSP	Response to 3/24/98 letter re: technical and legal conclusions.
4/28/1998	Dunn, DNR	Musso, NSP	Enclosing technical comments to SEH Supplemental Investigation Report dated 3/98.
5/4/1998	Musso, NSP	Dunn, DNR	Receipt of Remedial Action Plan dated 4/9/98.
5/20/1998	Wilson, NSP	Druckenmiller, DNR	Re: Spill Response Agreement
6/22/1998	DNR	NSP	Signed Spill Response Agreement
7/15/1998	Meyer, DNR	LHB, MBF	Enclosing documents pursuant to Spill Response Agmt.
7/20/1998	Musso, NSP	Dunn, DNR	Approval of seep area fence.
11/6/1998	Dunn, DNR	Musso, NSP	Encl. pipe analysis report performed by Crane Engineering.
12/7/1998	Dunn, DNR	Musso, NSP	NSP's preliminary comments on DNR Ecological Risk Assessment.
12/8/1998	MBF	Meyer, DNR	Spill Response Agmt. deadline for NSP's Supplemental Remedial Options Report changed to 3/1/99.
1/4/1999	Meyer, DNR	Wilder, NSP	NSP completed installation of additional fencing as required by Spill Response Agreement.
2/24/1999	DNR	NSP	Settlement proposal by NSP
3/1/1999	DNR	NSP; D&M	Submittal of Ecological Risk Assessment, Remediation Action Options FS, Supplemental Facility Site Investigation, Remedial Action Options Evaluation Report as required by the Spill Response Agreement.
4/12/1999	EPA	Bay Area North Guard! ("Bang")	Ranking request for superfund consideration (Petition for Preliminary Assessment)
4/20/1999	Wilson, NSP	Fennessey, DNR	Enclosing draft copies of DNR's Communication and Remedy Selection Plans for review and comment.
4/30/1999	Fennessey, DNR	Wilson, NSP	Comments to draft DNR Communication and Remedy Selection Plans.
6/5/1999	Wilson, NSP	Fennessey, DNR	NSP's comments to draft WDNR Remedy Selection White Papers.
6/8/1999	Ashland Lakefront Oversight Team	Ashland Lakefront Technical Team	Draft DNR Remedy Selection "White Paper" re: free product recommendation.
6/16/1999	EPA	Bang	Second Request for Superfund consideration

Date	To	Prepared By	Document Description
6/30/1999	Musso, NSP	Dunn, DNR	Draft Remedy Selection criteria.
7/6/1999	Bang	EPA	Response to Petition for Preliminary Assessment. EPA will assess the site for inclusion on the Superfund National Priorities List ("NPL").
7/29/1999	Dunn, DNR	D&M	1999 Supplemental Site Investigation ("SSI") work plan submitted to DNR.
8/5/1999	Musso, NSP	Dunn, DNR	Conditional approval of SSI work plan.
8/10/1999	Daniels, DNR	Musso, NSP	NSP's comments to DNR conceptual matrix for remedial option selection
10/15/1999	Griffin, EPA	Amerson, DNR	DNR Preliminary Assessment/Screening Site Inspection Equivalent document submitted to EPA for Ashland site.
11/12/1999	Musso, NSP	Dunn, DNR	Conditional Approval for Conceptual Interim Measure and further investigation.
1/14/2000	Musso, NSP	DNR	Information requested to complete HRS scoring for EPA Preliminary Assessment for NSP listing of Ashland site.
1/25/2000	Dunn, DNR	D&M	Concurrent Sediment Sampling Work Plan at same location as DNR.
2/2/00	EPA	MBF	Enclosing handouts from 2/1/00 meeting.
2/9/2000	Dunn, DNR	Wilson, NSP	Objections and responses to DNR's 1/14/00 information request.
2/10/00	EPA	MBF	Enclosing copies of witness affidavits.
2/17/2000	Dunn, DNR	D&M	Data validation for analytical results for all environmental media samples by D&M since 1995 at the Ashland site.
3/28/2000	Gov. Thompson	EPA	Requests concurrence of State of WI on listing Ashland site on NPL.
3/31/00	EPA	MBF	Enclosing IGT report.
4/11/2000	Musso, NSP	Dunn, DNR	Conditional Approval for Coal Tar Recovery Interim Remedial Action to remove free product MGP waste beneath NSP property.
5/5/2000	Musso, NSP	Dunn, DNR	DNR's response to IGT's Feb. 2000 report re: Comparative Analysis of NAPL Residues from the MGP site and Ashland Lakefront property.
5/19/2000	Musso, NSP	Dunn, DNR	Conditional Approval of Interim Coal Tar Remediation Plan.
5/31/2000	EPA	Gov. Thompson	Re: concurrence to NPL listing of Ashland site
6/5/2000	Musso, NSP	Dunn, DNR	Compliance Notice of Violation
6/13/2000	Musso, NSP	Dunn, DNR	DNR's comments to IGT proposal for estimating volume of coal tar present at the Ashland Lakefront site.
6/26/2000	Gov. Thompson	EPA	Approval of state lead for all cleanup activities at the site.
6/27/2000	Dunn, DNR	MBF	Response to 6/15/00 compliance violations letter.
7/7/2000	Gordon, DNR	Musso, NSP	Providing IGT's response to DNR's comments concerning IGT's proposal for estimated volume of coal tar.
8/16/2000	EPA	Gov. Thompson	Agrees to concur on listing of Ashland site on NPL.
11/26/2000	Gordon, DNR	Winslow, NSP	Enclosing IGT (GTI) report re: Volumetric Estimates of DNAPL in the environment and total tar production from the MGP.
12/1/2000	Federal Register	EPA	Proposed listing of Ashland site on NPL.
1/26/2001	Dunn, DNR	URS	Request for additional sediment samples; Request for URS to conduct concurrent sediment sampling.
1/30/2001	EPA	Winslow, NSP	Comments re: proposed listing of Ashland site on NPL.

Date	To	Prepared By	Document Description
3/22/2001	Winslow, NSP	Dunn, DNR	RP Letter - DNR requests additional work at the site.
3/28/2001	Dunn, DNR	Winslow, NSP	Response to DNR 3/22/01 RP letter
5/4/2001	NSP	DNR	Response to NSP's 3/28/01 letter
5/25/2001	Dunn, DNR	Winslow, NSP	Response to DNR 5/4/01 letter.
5/30/2001	EPA	Bazzel, DNR	Cooperative Agreement Application requesting the Superfund Program fund DNR state lead activities.
6/14/2001	Winslow, NSP	Dunn, DNR	Comments to NSP/URS Box Culvert Investigation work plan.
7/6/2001	Dunn, DNR; Peterson, EPA	Winslow, NSP	Comments re: TOSC's review of the SEH and D&M Ecological Risk Assessment reports.
7/18/2001	Winslow, NSP	Dunn, DNR	Re: clay pipe investigation
8/13/2001	Dunn, DNR	Winslow, NSP	Providing GTI report to DNR re: update of volumetric estimate of DNAPL in bay area.
8/21/2001	Winslow, NSP	Dunn, DNR	Response to GTI update on volumetric estimates of DNAPL in the environment.
9/5/2001	Winslow, NSP	Dunn, DNR	Approval of URS work plan for investigation of clay tile pipe.
10/17/2001	Dunn, DNR	Winslow, NSP	Enclosing GTI responses to DNR comments re: volumetric estimate update.
10/18/2001	Winslow, NSP	Dunn, DNR	Conditional approval of URS Courtyard Pipe Investigation workplan for additional site investigation on NSP property.
12/6/2001		US Dept. of Health & Family Services	Public Health Assessment "Coal Tar Contamination Associated with a former MGP Ashland/NSP Lakefront".
1/3/02	EPA	MBF	Enclosing deposition transcripts.
2/5/2002	WI DOH	NSP	Comments to 12/6/2001 Public Health Assessment.
2/28/2002	Dunn, DNR	Winslow, NSP	Submitting URS Clay Title Investigation report to DNR.
5/17/2002	Stakeholder	EPA	Invitation to participate in EPA Contaminated Sediments Technical Advisory Group ("CSTAG") meeting regarding issues of concern related to cleanup of contaminated sediments at the Ashland site. Meeting will be held on 7/16/02.
6/14/2002	Peterson, EPA	NSP	CSTAG Position Paper: NSP is most proactive stakeholder at the site. Paper describes the Ecological Risk Assessment issues and evaluation of management principles accomplished to date.
9/3/2002	EPA CSTAG Advisory Committee	Peterson, EPA	CSTAG Recommendations regarding the Ashland site.
9/5/2002	Federal Register	EPA	Final listing of Ashland Lakefront site on NPL.
9/10/2002	D. Johnson, DNR	MBF	Summary of numerous settlement attempts with DNR.
9/24/2002	Peterson, EPA	Winslow, NSP	Proposal for meeting to discuss how CSTAG recommendations can be implemented.
10/4/2002	Peterson/Melodia, EPA	NSP	Response to NPL listing of Ashland Lakefront site.
10/16/02	Peterson, EPA	Dunn, DNR	DNR's comments to CSTAG recommendations.
11/12/2002	EPA & CSTAG Advisory Committee	Winslow, NSP	NSP's proposal and response to selected CSTAG recommendations for the site.
11/21/2002	Winslow, NSP	Dunn, DNR	Summary of 10/22/02 meeting between EPA, NSP and DNR.

Date	To	Prepared By	Document Description
3/5/2003	MBF	EPA	Proposed Administrative Order on Consent ("AOC") and Scope of Work ("SOW") for Ashland Lakefront Site.
3/11/2003	Melodia, EPA	MBF	Summary of concurrent sediment sampling issues.
3/14/2003	Dunn, DNR	URS	"Strawman" Baseline Problem formulation submitted to DNR.
4/6/2003	EPA	MBF	NSP's proposed revisions to AOC and SOW.
8/5/2003	MBF	EPA	General Notice of Liability for Ashland Lakefront Site.
8/26/2003	EPA	MBF	NSP's Good Faith Offer to conduct the RI/FS work at the Ashland/NSP Lakefront site.
9/8/2003	MBF	EPA	Acknowledges NSP's Good Faith Offer and extends the AOC and SOW negotiation period for 30 days.
9/25/03	NSP	EPA	Granting conditional approval of the QAPP dated 8/22/03.
10/9/2003	MBF	EPA	Revised AOC & SOW
10/21/2003	EPA	MBF	NSP's suggested revisions to AOC & SOW.
11/14/2003	MBF/NSP	EPA	Final Executed AOC and SOW
12/15/2003	Jaffess, EPA	Newfields	Technical Letter Report comparing SEH (8/22/03) and URS (11/13/03) work plans, pursuant to the AOC.
4/2/04	EPA	NSP	Request to complete well installation
4/14/04	City of Ashland	EPA	Access agreement between City and NSP for collection of data from Kreher Park.
12/7/04	NSP	EPA	Conditional Approval of 10/18/04 version of the RI/FS Work Plan
1/12/05	NSP	EPA	Billing for recovery of costs incurred by EPA oversight activity.
6/14/05	NSP	EPA	Approval of sampling schedule for sediment program
6/27/05	MBF	EPA	Cost documentation for State Cooperative Agreement.
7/27/05	NSP	EPA	Conditional approval of QAPP Addendum #3
1/23/06	NSP	EPA	EPA Oversight Cost bill
3/21/06	NSP	EPA	RI schedule approved
6/20/06	EPA	MBF	NSP/Ashland Lakefront Site PRP Investigation Report
8/16/06	NSP	EPA	Comments to HHRA
8/30/06	NSP	EPA	Comments to RI report
9/1/06	NSP	EPA	Comments to SSA and BERA
9/1/06	NSP	EPA	Comments to Draft BERA
10/18/06	NSP	EPA	Re: outstanding issues and proposed alternative FS schedule.
10/18/06	NSP	EPA	Letter re: RI/FS schedule modification
10/25/06	EPA	NSP	Response to EPA's 10/18/06 letter re: RI/FS schedule modification
10/27/06	EPA	NSP	Response to EPA comments dated 8/30/06
10/27/06	EPA	NSP	Response to EPA's RI Report comments, SSA comments, BERA comments and HHRA comments and transmittal email
11/10/06	EPA	NSP	Submitted historical bioassays

Date	To	Prepared By	Document Description
12/20/06	NSP	EPA	Approval of treatability studies; required work plan to be submitted within 30 days
12/22/06	NSP	EPA	Comments to NSP's 10/27/06 response to draft RI report comments.
12/22/06	NSP	EPA	EPA comments to NSP re: draft HHRA, SSA and BERA
2/20/07	NSP	EPA	Comments to proceed with treatability studies workplan.
3/13/07	NSP	EPA	EPA Oversight Cost bill
3/15/07	NSP	EPA	Comments to 1/22/07 draft ASTM report
3/28/07	EPA/ DNR	NSP	Re: confined disposal facility (CDF) and lakebed filling.
3/30/07	NSP	DNR	Response to 3/28/07 letter
4/25/07	NSP	EPA	Comments to RAO
4/25/07	NSP	EPA	EPA's final revisions to RAO Document and Appendix A
4/25/07	NSP	EPA	PRG Technical Memo discussing sediment PRG with Attachments 1-5
4/25/07		EPA	EPA PRG Technical Memos Attachment 1-5
4/26/07	NSP	EPA	Comparative Analysis of Alternatives Technical Memo due within 30 days
5/15/07	NSP	EPA	Comments to draft ASTM
5/30/07	EPA	MBF	Addendum A to Ashland/NSP Lakefront Site PRP Investigation Report
7/9/07	NSP	EPA	Comments to 1/25/07 revised draft RI report.
7/9/07	NSP	EPA	Comments to 5/9/07 revised draft ASTM.
7/10/07	NSP	EPA	Comments to NSP's revised draft BERA.
8/17/07	NSP	EPA	Final revisions to RI report.
8/17/07	NSP	EPA	Final revisions to ASTM report.
8/23/07	NSP	EPA	Final revisions to BERA report.
8/23/07	NSP	EPA	Final revisions to HHRA report.
8/30/07	EPA	URS	Final BERA
8/31/07	EPA	URS	Final Remedial Investigation Report, including Conceptual Site Model report
9/7/07	NSP	EPA	Comments to CAA.
9/10/07	EPA	Newfields	Final Alternatives Screening Technical Memo and Final HHRA
9/19/07	NSP	EPA	Additional comments to RI Report and HHRA.
9/24/07	EPA	NSP	Letter to EPA re: BERA
9/26/07	EPA	Newfields	RI and HHRA reports cover letter to EPA
9/26/07	EPA	URS	Final HHRA
10/26/07	EPA	Newfields	Enclosing 3rd and final Treatability Test report prepared in accordance with EPA's approval of the 2/23/07 Treatability Studies Work Plan.
2/5/08	NSP	EPA	EPA comments to BERA
2/15/08	NSP	EPA	Comments to draft FS
2/29/08	NSP	EPA	104(e) Request

Date	To	Prepared By	Document Description
3/31/08	NSP	EPA	EPA Oversight Cost bill
4/22/08	EPA	NSP	Response to 104(e) Request with supporting documentation
7/9/08	EPA	MBF	Addendum B to Ashland/NSP Lakefront Site PRP Investigation Report
8/1/08	EPA & DNR	NSP	Final Groundwater Sampling Plan incorporating EPA review comments.
8/31/08	EPA	URS	Final Remedial Investigation (RI) report
9/20/08		NSP, City of Ashland, DNR	Framework Document between NSP, City of Ashland and DNR
9/25/08	NSP	EPA	Final revisions and comments to revised FS
10/4/08	NSP	EPA	Approval of Final FS
12/5/08	EPA	URS	Final Feasibility Study (FS)
1/5/09	NSP	EPA	*Notice of Violations re: RCRA compliance*
1/13/09	MBF	EPA	Responses from City of Ashland and Soo Line Railroad to EPA 104(e) request
3/19/09	NSP	EPA	EPA Oversight Cost bill
3/24/09	NSP	WI DOJ	Stipulation and Order for Judgment for settlement of DNR cost recovery case
5/5/09	NSP	EPA	Comments to Proposed Technical Approach to Performance Standards
5/21/09		EPA	EPA NRRB Recommendations and NRRB Attachment 1
6/12/2009		EPA	EPA Proposed Plan for Ashland/NSP Lakefront Site
7/8/09	EPA	MBF	*Request for Extension of Public Comment Period to Proposed Plan*
7/10/09	EPA	NSP	Request for Notification of Completions of work required by AOC

II. CONSULTANT REPORTS & COMMENTS SUBMITTED TO EPA/DNR

Date	Consultant/Author	Report / Comment Description
1/31/94	Northern Environmental	Environmental Assessment Report (8/1989)
8/94	SEH	Draft Remedial Investigation Interim Report
1/23/95	Cedar Corp.	Data from field work conducted 12/94 at the NSP facility
2/27/95	SEH	Existing Conditions Report — Ashland Lakefront Property
3/17/95	Dames & Moore	Final Report — Ashland Lake Front/NSP Project
4/19/95	Dames & Moore	Proposed Work Plan for Remedial Action Plan

4/20/95	DNR	Conditional Approval of D&M Proposed Work Plan for RAP
4/26/95	Dames & Moore	Response to DNR Conditional Approval of D&M 4/19/95 Proposed Work Plan for RAP
7/14/95	DNR	Comments re: Draft D&M Site Investigation Report and RAP
8/1/95	Dames & Moore	Final Site Investigation Report and Remedial Action Plan
8/4/95	Dames & Moore	Alternative Containment Design
8/24/95	Dames & Moore	Design Report, Bidding Documents, Plans and Specifications for Interim Remedial Action
9/22/95	DNR	Comments re: 8/1/95 D&M Site Investigation Report proposing interim action
9/29/95	DNR	Conditional Approval of 8/1/95 D&M Site Investigation Report
10/26/95	Dames & Moore	Data summaries for VOCs and SVOCs from samples collected
2/16/96	SEH	Draft Remediation Action Options Feasibility Study — Ashland Lakefront Property
2/21/96	SEH	Sediment Investigation Work Plan — Ashland Lakefront Property
4/15/96	DNR	Requesting further investigation
4/96	Dames & Moore	Supplemental Site Investigation Work Plan and Schedule
5/9/96	DNR	Conditional Approval of 4/96 D&M Supplemental Site Investigation Work Plan
5/28/96	Dames & Moore	Draft SEH Remediation Action Options Feasibility Study - Review Comments for NSP
7/22/96	SEH	Sediment Investigation Report — Ashland Lakefront
8/7/96	Dames & Moore	Supplemental Groundwater Investigation Final Report
9/27/96	Dames & Moore	Proposed Work Plan — Deep Aquifer Investigation - Copper Falls Formation

9/27/96	Dames & Moore	Response to Comments - Supplemental Groundwater Investigation and Comments - SEH Sediment Investigation Report, Ashland Waterfront Site
10/28/96	DNR	Comments to D&M 8/7/96 Supplemental Groundwater Investigation Final Report
12/11/96	Dames & Moore	Response to WDNR Comments on D&M Supplemental Groundwater Investigation Final Report
2/27/97	Dames & Moore	Copper Falls Aquifer Groundwater Investigation
5/97	SEH	Comprehensive Environmental Investigation Report
5/16/97	NSP	Comments to 5/97 SEH Draft Comprehensive Environmental Investigation Report
7/18/97	Dames & Moore	Scope of Work & Schedule for Installation of Monitor Well and Extraction Well; Conduct Aquifer Performance Test; Sample Copper falls Formation Wells
7/24/97	Dames & Moore	Comments on Proposed Ecological Risk Assessment
10/20/97	Dames & Moore	Aquifer Performance Test and Groundwater Monitoring Results for NSP facility
1/15/98	Dames & Moore	Proposed schedule for RAP submitted to DNR
1/27/98	DNR	Conditional Approval of NSP schedule for RAP Submittal for Copper Falls Aquifer.
3/16/98	SEH	Supplemental Investigation Report
3/24/98	Dames & Moore	Exploration Trench Activities and Findings (2 inch pipe report)
3/26/98	SEH	Human Health Risk Assessment Exposure Assumptions
4/9/98	Dames & Moore	Remedial Action Plan — Lower Copper Falls Aquifer
4/9/98	Dames & Moore	Comments to SEH Human Health Risk Assessment Exposure Assumptions
4/23/98	SEH	Ecological Risk Assessment
4/27/98	Dames & Moore	Comments to SEH Supplemental Investigation Report
6/29/98	SEH	Baseline Human Health Risk Assessment
7/10/98	Dames & Moore	Fencing Plan

7/23/98	Dames & Moore	Supplemental Site Investigation Work Plan
10/7/98	SEH	Ecological Risk Assessment
10/15/98	Crane Engineering	Examination of excavated pipe sample
12/4/98	Dames & Moore	Gas & Tar Production & Release Estimates
12/7/98	Dames & Moore	Comments to SEH Ecological Risk Assessment
12/10/98	SEH	Remediation Action Options Feasibility Study
12/18/98	Dames & Moore	Supplemental Investigation Analysis Results
3/1/99	Dames & Moore	Ecological Risk Assessment for the Ashland Lakefront Property
3/1/99	Dames & Moore	Supplemental Facility Site Investigation and Remedial Action Options Evaluation Report for NSP facility
3/1/99	Dames & Moore	Remedial Action Options Feasibility Study -- Final Report – for the Ashland Lakefront Site
3/30/99	Allen Hatheway	Peer Review of MGP Tar Calculations
4/2/99	Dames & Moore	PCB Testing Work Plan
4/17/99	Lee Gjovik/ Gjovik Consulting	Report on the Use of Water Gas Tar as a Wood Preservative
7/2/99	Dames & Moore	Supplemental PCB Site Investigation Results for NSP facility
7/29/99	Dames & Moore	Supplemental Site Investigation Work Plan for NSP facility
10/15/99	WI Department of Health	Fish Tissue Exposure Investigation
10/22/99	Dames & Moore	1999 Supplemental Site Investigation for NSP facility
11/18/99	IGT	Fingerprint Analysis of Free Product Samples from MS-15 and MW-7
1/2000	WI Department of Health	Health Information for Hazardous Waste Sites, Ashland/NSP Lakefront Site

2/21/00	IGT	Proposal for review of volumetric calculations and tar estimates.
3/00	IGT	Comparative Analysis of NAPL Residues from the NSP Ashland Former MGP and Ashland Lakefront Property (Kreher Park)
3/8/00	Dames & Moore	Interim Design – Plans & Specifications at NSP facility
5/00	IGT	ADDENDUM to the IGT Report: Comparative Analysis of NAPL Residues from the NSP Ashland Former MGP and Ashland Lakefront Property (Kreher Park) – Comparative Analysis of Sediment Samples from the Chequamegon Bay near the Kreher Park Shoreline
5/5/00	DNR	Response to IGT's Comparative Analysis Report.
6/13/00	DNR	Comments re: IGT 2/21/00 Tar Estimate Proposal.
6/23/00	EPA	Dr. Plumb's 5/8/00 Comments re: IGT's Comparative Analysis Report.
6/28/00	NSP/IGT	Response to DNR 5/5/00 Comments re: Comparative Analysis Report.
7/7/00	NSP/IGT	Response to DNR 6/13/00 comments re: IGT Tar Estimate Proposal.
9/7/00	Dames & Moore	Interim Action Groundwater Monitoring Plan for NSP Facility
11/1/00	IGT	Report: Volumetric Estimate of DNAPL in the Environment and Total Tar Production from MGP Facility (11/1/00)
1/4/01	Meta Environmental	Response to Dr. Plumb's 5/8/00 Comments re: IGT Reports.
2/01	Dames & Moore (n/k/a URS)	Interim Action Progress Report – Coal Tar Recovery System
2/01	URS	Interim Action O&M Report – Coal Tar Recovery System
2/01	URS	Interim Action Construction Documentation
2/01	SEH	Seep Investigation Work Plan
2/01	URS	Interim Action Progress Report #1 – Coal Tar Recovery System
4/10/01	IGT (k/n/a GTI)	2ND ADDENDUM Comparative Analysis of 2 Samples
5/01	GTI	3RD ADDENDUM Comparative Analysis of 10 Sediment Samples from Bay

5/01	SEH	Pipe Source Investigation & Fingerprint Sampling – DNR workplan & contracts (5/01 & 4/00)
5/01	WI Department of Health	Fact Sheet – History of Ashland/NSP Lakefront Site
5/14/01	Technical Outreach Services for Communities ("TOSC")	Review of SHE and Dames & Moore Ecological Risk Assessments of Contaminated Offshore Sediments
6/01	URS	Response to EPA Comments on SHE Contaminated Sediments Ecological Risk Assessment and Response to TOSC Comments to Dames & Moore Ecological Risk Assessment
6/7/01	URS	NSP/Ashland Lakefront Sediment Sample Results – Final Report
7/01	URS	Interim Action Progress Report #2 – Coal Tar Recovery System
8/3/01	GTI	Revised Estimation of Tar (DNAPL) in Bay Sediments
8/17/01	URS	Work Plan to Perform Pipe Investigation – Buried Ravine – Clay Pipe
10/01	MSA	Phase I Environmental Site Assessment
10/01	SEH	Investigation, Interim Remedial Action Options & Design Report
10/22/01	URS	Interim Response Progress Report #3 – Coal Tar Recovery System
12/6/01	MSA	Final Phase II ESA Work Plan
12/7/01	URS	Air Monitoring Results from Pipe Investigation conducted 9/17/01
12/20/01	URS	Interim Response Progress Report #4 – Coal Tar Recovery System
1/10/02	GTI	4th Addendum: Analysis of 11 Liquid Samples and 1 Soil Sample from Lakefront Site
1/15/02	URS	Work Plan for Piezometer Installations
1/22/02	Battelle	Environmental Forensic Investigation of Subsurface Pipes containing tar residues near a former MGP in Ashland, WI
2/19/02	URS	Clay Tile Investigation Report
2/19/02	SEH	Ecological Risk Assessment Supplement
2/28/02	URS	Interim Progress Report #5 – Coal Tar Recovery System

3/2/02	URS	Contingency Plan for Interim Coal Tar Recovery System
4/10/02	URS	Seep Area Interim Action Workplan and Report
4/24/02	DNR	Scope of Work for RI/FS Contractors
4/29/02	GTI	Comments to 1/22/02 Battelle Environmental Forensic Investigation report
5/6/02	URS	Former Gas Holder Work Plan – Additional Piezometer Installation
5/13/02	NSP	Critique of SEH Ecological Risk Assessment submitted to DNR and EPA
6/02	DNR	Public Outreach and Education Scope of Work
6/6/02	MSA	Phase II Environmental Site Assessment Report (for area east of Prentice Ave.)
6/24/02	URS	Interim Progress Report #6 – Coal Tar Recovery System: Mar. 2002 groundwater results
8/5/02	GTI	5th Addendum: Comparative Analysis of 4 liquid samples from NSP/Ashland Lakefront Site.
8/19/02	URS	Seep Area Interim Action Construction Documentation Report
9/02	CSTAG (Ellis & McCulley)	CSTAG Recommendations on Ashland/ NSP Lakefront Site
9/25/02	URS	Interim Progress Report #7 – Coal Tar Recovery System: June 2002 groundwater results
12/02	URS	Quality Assurance Project Plan – Ashland Lakefront Project
1/8/03	Battelle	Target Analyte Recommendation
1/16/03	URS	AOC Work Plan #1 – Supplemental Site Investigation & Piezometer Installation
1/18/03	URS	Interim Progress Report #8 – Coal Tar Recovery System: Sept. 2002 groundwater results
2/5/03	SEH	Quality Assurance Project Plan (QAPP) Task Specific – OU #4 Winter 2003 Sediment Sampling

2/27/03	URS	Quality Assurance Project Plan Addendum – OU4 Winter Sediment Split Sample Collection
3/14/03	URS	"Strawman" Baseline Problem Formulation
4/03	SEH	Proposal for Limited Investigation Problem Formulation Study Design Field Verification Workplan
5/15/03	URS	Interim Progress Report #9 – Coal Tar Recovery System
8/5/03	URS	Interim Progress Report #10 – Coal Tar Recovery System
8/22/03	URS	Draft RI/FS Work Plan
8/22/03	URS	Quality Assurance Project Plan Vol. 1 & 2 – Ashland Lakefront Superfund Site
9/25/03	US Dept. of Health	Public Health Assessment Report
10/9/03	URS	Interim Progress Report #11 – Coal Tar Recovery System – includes June 2003 Groundwater monitoring results.
10/31/03	SEH	Remedial Investigation Work Plan
11/6/03	URS	Quality Management Plan submitted to EPA
12/12/03	Newfields	AOC Monthly Progress Report #1
12/15/03	Newfields	AOC Technical Letter Report to EPA comparing RI/FS work plans by SEH and URS along with a Supplemental Report
1/15/04	Newfields	AOC Monthly Progress Report #2
2/04	URS	The following Reports: 1. RI/FS Workplan (2/2004) 2. QAPP (2/2004) 3. Project Mgmt. Plan (2/2004) 4. Health & Safety Plan (2/2004) 5. Field Sampling Plan (2/2004)
2/04 – 7/09	Newfields	AOC Monthly Progress Reports #3 to #65
4/14/04	Newfields	Addendum Work Plan for collection of Smelt, Osmerus Mordax at Ashland/NSP Lakefront Superfund Site
10/18/04	URS	RI/FS Work Plan – Rev. 2 The following reports: 1. RI/FS Workplan (10/2004)

		2. QAPP (10/2004) 3. Project Mgmt. Plan (10/2004) 4. Health & Safety Plan (10/2004) 5. Field Sampling Plan (10/2004)
2/1/05	URS	Final RI/FS Work Plan including the following reports: 1. RI/FS Workplan 2. QAPP 3. Project Mgmt. Plan 4. Health & Safety Plan 5. Field Sampling Plan
5/5/05	URS	Contract with OSI and workplan for May 2005 Reconnaissance Survey
5/2/05	URS	QAPP Addendum #2 to Original RI/FS Workplan QAPP
6/3/05	URS	QAPP Addendum #3 to Original RI/FS Workplan QAPP
9/24/05	URS	RI/FS Work Plan Revision – Addendum Work Plan for Clay Pipe Investigation
10/5/05	URS	Revised QAPP Addendum #3
2/16/06	Mattingly/URS	Environmental Forensic Investigation Report
3/15/06	Newfields	Sediment Stability Assessment Report ("SSA")
4/7/06	Newfields	Draft Human Health Risk Assessment Report ("HHRA")
5/30/06	Newfields/URS	Draft Baseline Ecological Risk Assessment Report ("BERA")
6/5/06	Newfields/URS	Draft Remedial Investigation Report ("RI")
6/20/06	MBF	Ashland/NSP Lakefront Site PRP Investigation Report
9/22/06	Newfields	Candidate Technologies and Testing Needs Technical Memo and QAPP Addendum #4
10/30/06	NSP	Responses to draft RI Report Documents – NSP's responses to EPA Comments re: RI Report, SSA, HHRA and BERA
11/22/06	Newfields	Treatability Study Technical Memo
1/19/07	Newfields	Treatability Study Work Plan
1/22/07	Newfields	Alterntives Screening Technical Memo
1/25/07	URS/Newfields	Revised RI Report Revised BERA report Revised HHRA report Revised SSA report

2/23/07	URS/Newfields	QAPP Addendum #4 and work plan
4/25/07	EPA	EPA PRG Technical Memo re: derivation of Sediment and PRG Technical Memo Attachments 1-5
5/9/07	URS	Draft ASTM and Remedial Action Objectives ("RAO") Memorandum
5/16/07	URS	Revised Draft RAO Memorandum
5/25/07	Newfields	Draft Comparative Alternatives Analysis ("CAA") Technical Memo
5/30/07	MBF	Addendum letter to Ashland/NSP Lakefront Site PRP Investigation Report.
7/30/07	Newfields	Revised RI Report Revised draft ASTM
7/31/07	Newfields	Final BERA report Final HHRA report
8/16/07	Newfields	Draft Bench Scale Air Emissions Treatability Study Report
8/30/07	URS/Newfields	Final revised HHRA Report
8/30/07	URS	Final BERA
8/31/07	URS/Newfields	Final RI Report
9/6/07	URS/Newfields	Final HHRA report
9/7/07	URS/Newfields	Final ASTM report
9/18/07	URS	Draft Cap Flux Test Treatability Study Report
9/26/07	URS/Newfields	Final HHRA report – revised
10/5/07	URS/Newfields	Revised Draft CAA technical memo
10/26/07	URS	Multiphase Flow and Consolidation Testing Treatability Study Report – 3rd Treatability Test Report prepared in accordance with EPA's approval of the 2/23/07 Treatability Studies Work Plan
10/29/07	URS/Newfields	Draft Feasibility Study ("FS") report
1/9/08	URS	Draft Addendum 1 to Cap Flux Test Treatability Study Report
7/9/08	MBF	Addendum B to Ashland/NSP Lakefront Site PRP Investigation Report
9/20/08	NSP/City/DNR	Framework Document for Cooperative Approach to Remediation and Redevelopment

10/17/08	EPA	Final NRRB Package
12/5/08	URS	Final Feasibility Study (FS)
4/22/08	MBF	EPA 104(e) Request Response with supporting documentation
10/17/08	EPA	Final NRRB Package
5/21/09	EPA	NRRB Recommendations and NRRB Attachment 1
6/12/09	EPA	EPA Proposed Plan for Ashland/NSP Lakefront Site

III. DNR Administrative Record Index (December 1987 – December 2003)

Ashland Lakefront Property
December 1987-December 1994

Page #	# pgs	Date	Title	Author	Recipient	Doc Type
2	1	12/3/87	Solid Waste Management Facility Contact Form	WDNR - Nancy Atzen	NSP - LeRoy Wilder	Form
3	8	12/22/87	NSP Coal Tar Removal	NSP - LeRoy Wilder	WDNR - Dennis Kugle	letter
11	4	6/27/88	Draft letter Re: Review & Approval of Phase I - Initial Survey & Removal of Coal Tar	WDNR - Mark Giesfeldt	NSP - LeRoy Wilder	letter
15	2	7/25/88	Final Letter Re: Review & Approval of Phase I - Initial Survey & Removal of Coal Tar	WDNR - Mark Giesfeldt	NSP - LeRoy Wilder	Letter
17	27	6/1/90	Wis. Ref summary, ranking sheet	Kathleen McConnell	File	Ref. summary
44	4	10/22/90	Letter Re: Intermediate cover & MW Placement	Michael Rayford	WDNR - Tom Kendzierski	Letter
48	1	6/21/91	Letter re: Telephone conversation confirmation concerning the Facilities Plan Amendment Bayfront Sewer Expansion	WDNR - Gerald Novotny	Michael Lynch & Assoc.	Letter Re: telephone conversation
49	2	8/21/91	Comment letter regarding conversation on proposed bayfront sewer extension	WDNR - Jamie Dunn	Stephen Brand, City of Ashland Water Utility	Letter
51	13	9/24/91	Preliminary Lab results 8/28/91 WWTP test pits	Northern Environmental - Bruce Rehwaldt	WDNR - Jamie Dunn	Letter
64	2	9/30/91	letter concerning problems with the main sewer	WDNR - Jamie Dunn	Michael Lynch & Assoc.	Letter
66	3	10/21/91	letter re: conditional approval of plans and specifications for Bay Front area sewer improvements	WDNR - Charles Burney	Jane Smith, Clerk, City of Ashland	Letter
69	2	3/10/94	Memo re: Consultant selection for Ashland Creosote Investigation	WDNR - Paul Didier	WDNR - Don Erikson	Memo
71	6	3/21/94	Minutes from SOW (Scope of Work) meeting DNR and SEH	WDNR - Jamie Dunn	File	Memo minutes of meeting
77	10	4/18/94	Case Tracking Form	WDNR - Karen Vermillion	File	letter
87	11	5/3/94	Application for RIPRAP	WDNR - Amy Mizia	File	Application
98	15	5/6/94	Scope of Work (SOW) Ashland Creosote Pit Environmental Repair Fund Program	S.E.H. - Cyrus Ingraham	WDNR - Jamie Dunn	SOW
113	1	5/23/94	Copies received regarding signed agreement for Creosote Pit I/T Study	S.E.H. - Cyrus Ingraham	WDNR - Davis Behn	Letter
114	2	10/25/94	Memo notification of greater contamination at WWTP	WDNR - Jamie Dunn	WDNR - Duane Lahti & Nancy Larson	Memo
116	2	10/25/94	Memo notification requesting approval to form a group to handle RI	WDNR - Jamie Dunn	WDNR - Gary Leroy, Tom DeWitt, John Gozdialski, Ted Smith	Memo
118	1	8/25/94	Notification 1st Phase Investigation finished on the WWTP	WDNR - Jamie Dunn	City of Ashland - Mayor Miller	
119	2	11/18/94	Request for Change Order for WDNR requested Add'l Services	SEH	WDNR - Jamie Dunn	Letter
121	2	11/23/94	Change Order Issued and signed	WDNR - Jonathan Young Eagle	File	Memo
123	1	12/1/94	Letter confirming Change Order received	WDNR - Jonathon Young Eagle	S.E.H. - Cyrus Ingraham	Letter
124	15	12/7/94	Project Status Meeting Remedial Investigation summary	SEH	file	Report
139	4	12/7/94	Project Status Meeting Development of Remedial Alternatives	SEH	file	Report
143	12	12/20/94	Analytical Results from Samples received 11/29/94	SEH	WDNR - Jamie Dunn	Report
155	2	12/27/94	Briefing Memo on Ashland Lakefront	WDNR - Jamie Dunn	WDNR - Gary LeRoy	Memo
157	2	12/28/94	Thank you response letter regarding meeting and requesting add'l work to further determine the extent of contamination	NSP - J.A. Musso	WDNR - Gary LeRoy	letter

Ashland Lakefront Property-BBRT's #02-02-000013						
January 1995-May 1995						
Pg #	**#Pgs**	**Date**	**Description**	**Author**	**Recipient**	**Item**
3	13	1/16/95	Citizen Interview list/sumaries	Veritas Associates for NSP	File	Interviews
16	9	1/19/95	Request for Change Order #2 for WDNR requested Add'l Services	SEH Cyrus Ingraham	WDNR - Jamie Dunn	Letter
25	55	1/23/95	data from ravine project	Cedar Co. - Mark Vinall	NSP - LeRoy Wilder	letter, lab analysis, maps, abandonment forms, data shts
80	3	2/17/95	Memo on recommendations for sampling	WDNR - Xiaochun Zhang, WR/2	WDNR - Jamie Dunn	memo
83	6	2/20/95	Update letter	NSP - James Musso	WDNR - Gary LeRoy	letter
89	3	3/2/95	NSP Notice of (PRP) Potential Responsible Party	WDNR - Jamie Dunn	NSP - James Musso	RP Letter
92	4	3/7/95	News release	WDNR - Jamie Dunn	News	News Release
96	2	3/7/95	NSP Executive Summary	NSP	File	Letter
98	3	3/8/95	NSP's Response to PRP letter	Michael Best & Friedrich - Charles Sweeney	WDNR - Jamie Dunn	letter
101	3	3/13/95	Harmful Chemicals Found on Bay Edge	Governor Thompson Northern Office - Donna Somerville	WDNR - Bill Smith	News Article
104	1	3/16/95	Memo re: Agenda for upcoming meeting between NSP and DNR in Eau Claire	WDNR - Jamie Dunn	WDNR - Linda Meyer & Gary LeRoy	memo
105	1	3/17/95	Letter Re: 3/21/95 PRP meeting	Michael Best & Friedrich - Charles Sweeney	WDNR - Jamie Dunn	letter
106	2	3/24/95	Comment on the 3/21/95 PRP meeting with WDNR and S.E.H.	Charles Sweeney, Michael Best & Friedrich	Tony Murphy, City of Ashland and Thomas Keewig, County of Ashland	letter
108	1	3/24/95	NSP's File Document Request	Michael Best & Friedrich - Charles Sweeney	WDNR - Jamie Dunn	letter
109	2	3/27/95	NSP's PRP Letter re: Indiana Mich. Power and Southeastern MI Power	Michael Best & Friedrich - Charles Sweeney	WDNR - Linda Meyer	letter
111	2	3/30/95	Response letter to PRP (Potential Responsible Party) letter	City Attorney - Scott Clark	Michael Best & Friedrich - Charles Sweeney	letter
113	1	4/3/95	Response letter to PRP (Potential Responsible Party) Report 3/18/95	WDNR - Jamie Dunn	NSP - James Musso	letter
114	6	4/4/95	City of Ashland Ordinance #196 pertaining to the Historic MGP	Ashland City Hall	WDNR - Jamie Dunn	letter
120	2	4/4/95	Clarification letter in response to RP letter discussed at the meeting held March 21	WDNR - Linda Meyer	Michael Best & Friedrich - Charles Sweeney	Letter
122	2	4/5/95	Response letter confirming April 3rd's response letter and things discussed via phone	NSP - James Musso	WDNR - Jamie Dunn	letter
124	1	4/20/95	phone conversation record	DCOM - Shanna Laube	LeRoy Wilder, NSP	record
125	6	4/21/95	Proposed Site Investigation (SOW) Work Plan	Dames & Moore - David Trainor	File	Work Plan
131	2	4/21/95	Proposed Boring Locations	Dames & Moore - David Trainor	WDNR - Jamie Dunn	Fax
133	3	4/24/95	letter re: ad ran in Ashland paper	Michael Best & Friedrich - Charles Sweeney	WDNR - Linda Meyer	letter
136	3	4/24/95	Conditional approval of proposed (SOW) Scope of work	WDNR - Jamie Dunn	NSP - James Musso	letter
139	4	4/25/95	Change Order approval	WDNR - Jonathon Young Eagle	SEH Cyrus Ingraham	letter, change order, invoice
143	2	4/26/95	Conference Call Conditional approval response	Dames & Moore - David Trainor	WDNR - Jamie Dunn	letter
145	2	4/27/95	Follow-up on Conference Call Conditional approval of (SOW) Scope of work	WDNR - Linda Meyer	NSP - James Musso	letter

147	1	5/1/95	cover letter of report Survey of Tar Waste Disposal and Locations of Town Gas Producers	Renee Exum, Michael Best & Friedrich	WDNR - Jamie Dunn	letter
148	45	5/1/95	Regulations & Rate for NSP	NSP	File	Report
193	2	5/9/95	Memo re: fence construction	WDNR - Jamie Dunn	contractors	Faxed Memo
195	2	5/10/95	Change Order #2 issued and signed	SEH Cyrus Ingraham	WDNR	Form
197	9	5/15/95	Request for Bid to install Fence Construction	Jamie Dunn, WDNR	contractors	bid request
206	1	5/18/95	Letter regarding MW-2 substitute Sampling	Dames & Moore - David Trainor	WDNR - Jamie Dunn	letter
207	2	5/30/95	Fax Re: Railroad Right of Entry	WDNR - Jamie Dunn	WCRR - Geoff Nokes	fax
209	1	5/30/95	Cities Access Permission Form	City of Ashland	WDNR	form

Ashland Lakefront Property-BBRT's #02-02-000013						
June 1995-December 1995						
PG #	**# Pgs**	**Date**	**Description**	**Author**	**Recipient**	**Item**
3	2	6/2/95	Follow-up on Conference Call Conditional approval of (SOW) Scope of Work	WDNR - Linda Meyer	NSP - James Musso	letter
5	2	6/20/95	WCRR (WI Central Railroad) Access Permission Form	WCRR - Gene Timm	WDNR - Jamie Dunn	form
7	65	6/21/95	Internal Review of Draft Guidence - MGP	Coal Gas Tech Team	WDNR - Linda Meyer	draft reports
72	4	6/30/95	Follow-up letter regarding Conference Call 5/25/95	Michael Best & Friedrich - Linda Bochert	WDNR - Linda Meyer	letter
76	1	7/5/95	Request for copy of Report on Sampling Removal	Bad River Band of Chippewa Indians - Elizabeth Drake	WDNR - Jamie Dunn	letter
77	1	7/10/95	Memo Request Change Order #3	WDNR - Jamie Dunn	WDNR - Jonathon Young Eagle	memo
78	1	7/12/95	Memo groundwater/ surface water results	WDHSS - Kenneth Bro	WDNR - Jamie Dunn	memo
79	2	7/14/95	Change Order #3 Issued	WDNR - Jonathon Young Eagle	SEH Cyrus Ingraham	letter
81	5	7/14/95	Comments on Draft submittal S/I Report	WDNR - Jamie Dunn	NSP - James Musso	letter
86	1	7/25/95	Memo notification regarding "project name change"	WDNR - Jamie Dunn	WDNR - Tom Kendzierski	memo
87	4	7/27/95	Response Comments on Draft Submittal S/I Report	Michael Best & Friedrich - Linda Bochert	WDNR - Jamie Dunn	letter
91	1	7/31/95	Memo Phone Contact with Vernon Zak	WDNR - Jamie Dunn	file	memo
92	1	7/31/95	Memo notification NSP to finance fence construction at Kreher Park	WDNR - Jamie Dunn	WDNR - Chris Wilmot	memo
93	4	8/4/95	Alternative Containment Design	Dames & Moore - David Trainor	WDNR - Jamie Dunn	letter
97	2	8/9/95	Navigation Exclusion zones letter	WDNR - Ted Smith	WDNR - Scott Redman	memo
99	1	8/15/95	Chain of custody record	WDNR - Jamie Dunn	file	form
100	10	8/15/95	NSP & LSDP MGP Merger	Public Service Commmission of WI	file	court record
110	7	815/95	Manufactured Gas Plants (MGP's) Owned by NSP 4/8/93 Letter	NSP - James Musso	WI Public Service Commision - H. Meyer	letter
117	3	8/15/95	Proposed Interim Action - Notice of Removal Action & Public Comment Session	NSP - John Wilson	WDNR - Jamie Dunn	letter
120	1	8/18/95	Change Order #3 Receipt Letter	SEH Cyrus Ingraham	Jonathon Young Eagle, WDNR	letter
121	1	9/1/95	Memo info related to Beaver Dam coal gas site	WDNR - Steve Ales	WDNR - Deb Johnson	memo
122	1	9/1/95	Guidence memo regarding the Sediment Sampling results on the bay	WDNR - Jamie Dunn	WDNR - Staff (6 members)	memo
123	4	9/4/95	PAH Caculation Results	WDNR - Xiaochun Zhang	WDNR - Jamie Dunn	Faxed Results
127	19	9/13/95	Sediment Sample Investigation results	WDNR - Xiaochun Zhang	WDNR - Jamie Dunn	Draft Reports
146	1	9/13/95	Review of Site Investigation (S/I) Report and Remedial Action (R/A) Plan	Natural Resource Technology, Inc.-Robert Karnauskas	Michael Best & Friedrich - David Crass	letter
147	2	9/25/95	Proposed Interim Remedial Action	WDNR - Jamie Dunn	NSP - James Musso	letter
149	1	9/25/95	Response Letter regarding 9/25/95 Letter	Michael Best & Friedrich - David Crass	WDNR - Deborah Johnson & Linda Meyer	letter
150	2	9/26/95	Response Letter regarding 9/25/95 Letter	WDNR - Deb Johnson	Michael Best & Friedrich - Linda Bochert	letter
152	2	9/28/95	Site Survey Map	NSP - LeRoy Wilder	WCRR - Scott Roberts	Letter
154	2	9/29/95	Conditional Approval Interim Action	WDNR - Jamie Dunn	NSP - James Musso	letter
156	1	9/29/95	Memo: Further Conditions for the Interim Action	WDNR - Jamie Dunn	WDNR - Deb Johnson & Rich Reidl	memo
157	4	10/4/95	Letter of Professional Experience	Atlantic Environmental - Thomas Helfrich	NSP - John Wilson	letter

161	3	10/10/95	Boring logs	Dames & Moore - David Trainor	WDNR - Jamie Dunn	fax results
164	1	10/13/95	Well nest installation	WDNR - Terry Koehn	Dames & Moore - David Trainor	Phone Record
165	19	10/18/95	letter re: City of Ashland Liability Issues	Michael Best & Friedrich - Linda Bochert & David Crass	WDNR - Deb Johnson	letter
184	6	10/18/95	Letter proposed agenda for meeting 10/23/95	Michael Best & Friedrich - Linda Bochert	WDNR - Deb Johnson	letter
190	1	10/19/95	Confirmation Letter RE: telephone conversation	WDNR - Deb Johnson	Michael Best & Friedrich - Linda Bochert	letter
191	4	10/19/95	Memo: Site Investigation (S/I) report & Remedial Action (R/A) Plan recommendation	WDNR - Rich Riedl	WDNR - Jamie Dunn	memo
195	8	10/23/95	Health Consultation on exposure to coal tar	WDHSS - Kenneth Bro	WDNR - Jamie Dunn	memo
203	1	10/26/95	Copies of Health Consultation sent	WDHSS - Kenneth Bro	City of Ashland - Tony Murphy	letter
204	5	10/26/95	1995 Sediment Sampling Dunn & Redman	WDNR - Dunn & Redman	File	Sampling
209	5	10/26/95	Data Summaries for VOC's and SVOC's	Dames & Moore - David Trainor	WDNR - Jamie Dunn	memo
214	1	10/30/95	Interim Action Construction: Notice - put on hold	Michael Best & Friedrich - Linda Bochert	WDNR - Deb Johnson	letter
215	10	11/8/95	Ground Water (GW) Samples Analytical Results	SEH - John Guhl	WDNR - Jamie Dunn	analytical results
225	1	11/16/95	Confirmation Letter RE: 10/18/95 Copy Request	WDNR - Deb Johnson	Ashland City Attorney - Scott Clark	letter
226	1	11/29/95	Memo: Confirmation on Method Used for Sediment Sampling	WDNR - Scott Redman & Xiaochun Zhang	WDNR - Jamie Dunn	memo
227	10	11/29/95	Scope of Work (SOW) for Sediment Sampling	WDNR - Jamie Dunn	WDNR Dist 5	memo
237	1	12/4/95	Memo: SCOOT process	WDNR - Jamie Dunn	WDNR - Greg Hill	memo
238	1	12/6/95	re: Thank you SCOOT	WDNR - Greg Hill	WDNR - Jamie Dunn	e mail
239	2	12/8/95	Proposals for smart demonstration	WDNR - Scott Redman	WDNR - Lee Leibenstein	memo
241	37	12/9/95	NSP Remedial Investigation Briefing	NSP - James Musso	WDNR - Jamie Dunn	Report
278	2	12/13/95	Comments on scope of work	WDNR - Scott Redman & Xiaochun Zhang	WDNR - Jamie Dunn	memo
280	1	12/15/95	Site Controls for Sediment Sampling	WDNR - Jamie Dunn	WDNR - Bill Smith	memo
281	15	12/26/95	Draft-Sediment Investigation Scope of Work		file	report

Ashland Lakefront Property

January 1996-May 1996

Pg #	# pgs	Date	Description	Author	Recipient	Item
3	2	1/4/96	list of questions concerning DNR proposal	Michael Best & Friedrich - Linda Bochert	WDNR - Deb Johnson	fax
5	1	1/4/96	sediment investigation	WDNR - Jamie Dunn	WDNR - Jim Bishop	memo
6	10	1/5/96	ground penetrating radar sediment survey	WDNR - Jim Killian & Jim Beal	WDNR - Dale Patterson, Jamie Dunn	memo
16	1	1/9/96	press release re: sediment mapping	WDNR - Jamie Dunn	WDNR - Mark Geisfedt	press release
17	2	1/9/96	suggested revisions to Ashland sediment Investigation Scope of work	WDNR - Scott Redman	WDNR - Jamie Dunn & Jonathon Young Eagle	memo and draft scope of work
19	1	1/10/96	letter Re: Department's activities update	WDNR - Gary LeRoy	Mayor of Ashland - Lowell Miller	letter
20	2	1/10/96	Field Study of Sediments	WDNR - Bill Smith	WDNR - Maryann Sumi	Email
22	1	1/17/96	Follow up GPR (Ground Penetrating Radar) phone conversation	WDNR - Mark Giesfeldt, SW/3	WDNR - Gary LeRoy	memo
23	1	2/19/96	Cover letter for draft RAOFS	WDNR - Jamie Dunn	NSP - James Musso	cover letter
24	1	2/19/96	memo re: purchase requisitions procedures	WDNR - Jerry Stair	WDNR - Gary LeRoy	memo
25	2	2/19/96	memo regarding purchase order for the feasibility study	WDNR - Jamie Dunn	WDNR - Chris Wilmot	memo (2 copies)
27	9	2/22/96	memo re: purchase order process/memo from Stair to LeRoy, pg. From ERR Procurement procedures handbook, copies of purchase requisition & invoices	WDNR - Jamie Dunn	WDNR - Tom Kendzierski	memo w/ attchmnts
36	4	2/25/96	GPR memo with maps	WDNR - Jim Killian & Jim Beal	WDNR - Jamie Dunn	memo
40	1	3/1/96	letter re: sediment sampling investig	WDNR - Jamie Dunn	NSP - James Musso	letter
41	2	3/4/96	receipt letter re: sediment sampling investig.	NSP - James Musso	WDNR - Jamie Dunn	letter
43	2	3/7/96	Letter Re: Preliminary results from GPR Work	WDNR - Jim Killian, WR	SEH - Cy Ingraham	letter
45	1	3/13/96	memo re: sediment sampling completed	WDNR - Jamie Dunn	WDNR - 6	memo
46	2	3/27/96	letter re: request for NSP copy of prelim. draft report	Michael Best & Friedrich - Linda Bochert	WDNR - Maryann Sumi	letter
48	2	4/15/96	letter re: follow up of meeting 3/26/96	WDNR - Jamie Dunn	NSP - James Musso	letter
50	1	4/23/96	request for preliminary draft SEH report	WDNR - Deb Johnson	Michael Best & Friedrich - Linda Bochert	letter
51	11	4/30/96	supplemental site investigation work plan and schedule	NSP - James Musso	WDNR - Jamie Dunn	Workplan
62	1	4/30/96	navigation safety zone	WDNR - Jamie Dunn	WDNR - Gary LeRoy	memo
63	3	4/30/96	Letter Re: Health Consultation, Kreher Park	NSP - James Musso	WDHSS - Kenneth Bro	letter
66	1	5/8/96	suggested language and layout for warning signs	WDHSS - Kenneth Bro	WDNR - Jamie Dunn	memo
67	2	5/8/96	WARNING sign example		file	sign
69	1	5/8/96	memo requesting clarification of agreements between NSP & DNR	WDNR - Jamie Dunn	WDNR - Maryann Sumi, Deb Johnson, Bill Smith	memo
70	1	5/9/96	letter re: letter dated 04/30/96	WDHSS - Kenneth Bro	NSP - James Musso	letter
71	1	5/9/96	conditional approval supplemental investigation work plan	WDNR - Jamie Dunn	NSP - James Musso	letter

72	5	5/15/96	request for preliminary draft SEH report	Michael Best & Friedrich - Linda Bochert	WDNR - Deb Johnson	letter
77	4	5/15/96	brief memo re: warning signs, rough draft warning sign & private aid to navigation	WDHSS - Kenneth Bro	WDNR - Jamie Dunn	fax cover sht, draft sign & info
81	2	5/15/96	letter re: workplan addendum	D & M - David Trainor	WDNR - Jamie Dunn	letter & map
83	3	5/22/96	note transmitting soil remediation update	Steve A.	WDNR - Jamie Dunn	note & update
86	2	5/22/96	letter re: safety zone designation	WDNR - Jamie Dunn	Tony Beatrez	letter
88	6	5/29/96	letter and attachments re: the waterfront site being designated a federal safety zone	NSP - John D. Wilson	WDNR - Jamie Dunn	note & update
94	2	5/30/96	memo & sample sign	WDNR - Jamie Dunn	WDNR - 6	memo & sample sign
96	2	5/30/96	letter re: safety zone designation	City of Ashland - Tony Murphy	U.S. Coast Guard - Lt. Tony Beatrez	letter

Ashland Lakefront Property

June 1996-December 1996

PG #	# Pgs	Date	Description	Author	Recipient	Item
2	15	6/5/96	Health effects of exposure to coal tar & creosote compounds	WDHSS - Kenneth Bro	Ashland Co Health - Judy Hitchcock	memo & attchmnts
17	1	6/5/96	Safety Zone Response	US Coast Guard - A.J. Beatrez	WDNR - Jamie Dunn	letter
18	2	6/6/96	Draft News Release: Warning signs of contamination	Unknown	Unknown	news release
20	1	6/6/96	Synopsis of conference calls this week	WDNR - Jim Bishop	WDNR - Jamie Dunn	memo
21	2	6/10/96	Request to establish a safety zone	WDHSS - Kenneth Bro	US Coast Guard - J.M. Hartely,	letter
23	3	6/10/96	Joint ordinance to create safety zone	City of Ashland - Tony Murphy	WDNR - Jamie Dunn	fax trans & joint ordin.
26	3	6/14/96	Draft News Release with editorial comments	WDNR - Linda Pophal	WDNR - Jamie Dunn	Faxed Changes
29	8	6/15/96	Draft Final Rule: Safety zone faxed to Coast Guard	WDNR - Jamie Dunn	US Coast Guard - Tony Beatrez	Final Rule
37	5	6/20/96	Boating ordinance #06-1996-18 application	Ashland Co. Clerk	WDNR - Jamie Dunn	Record
42	3	6/27/96	Letter Re; Waterway marker in Lake Superior	WDNR - Diane Crawford	US Coast Guard - Kerry Sprague	letter
45	20	8/9/96	NSP'S Direct Testimony	Public Service Com of WI - Jodee Bartels	WDNR - Deb Johnson	testimony
65	5	8/12/96	Change Order Request #4	WDNR - Jamie Dunn	WDNR - Gary LeRoy	memo
70	21	8/22/96	Requested Technical Reports	WDNR - Deb Johnson	Mellonie States, Murphy & Maconachy	letter
91	1	8/23/96	Change Order Request #4	WDNR - Jamie Dunn	WDNR - Jonathon Young Eagle	memo
92	1	8/28/96	Reminder of the NSP technical meeting 9/4	WDNR - Jamie Dunn	Gary LeRoy, Jim Musso, Dave Trainor, Cy Ingraham	memo
93	3	9/4/96	Ashland Project notes	S.E.H. - Cyrus Ingraham	File	Notes
96	1	9/16/96	Response to information not previously provided	NSP - James Musso	S.E.H. - Cyrus Ingraham	letter
97	8	9/27/96	Response to Comments-Supplemental GW Investigation Comments-S.E.H. Sediment Investigation Report	Dames & Moore - David Trainor	WDNR - Jamie Dunn	letter
105	7	9/27/96	Proposed Work Plan for extent of GW Contaminant Plume within Copper Falls Aquifer	Dames & Moore - David Trainor	WDNR - Jamie Dunn	Work Plan
112	9	10/2/96	S.E.H. review of "Supplemental Groundwater Investigation"	S.E.H. - Cyrus Ingraham	WDNR - Jamie Dunn	letter & 2 diagrams
121	8	10/28/96	Response Comments to NSP on "Supplemental Groundwater Investigation"	WDNR - Jamie Dunn	Jim Musso, NSP	letter
129	23	12/11/96	Response Comments to WDNR on "Supplemental Groundwater Investigation"	Dames & Moore - David Trainor, Mark McColloch, David Swimm	WDNR - Jamie Dunn	letter

Ashland Lakefront Property-BBRT's #02-02-000013						
January 1997-December 1997						
PG #	**# Pgs**	**Date**	**Description**	**Author**	**Recipient**	**Item**
3	5	1/21/97	Memo and Draft (F/S) Feasibility Study (SOW) Scope of Work	WDNR - Jamie Dunn	WDNR - Jonathon Young Eagle	Draft Scope of Work
8	4	02/01/97	SEH Draft (SOP) Standard Operating Procedure	S.E.H.	File	SOP
12	11	2/28/97	Sediment Analysis	Nickels & Bradley, S.C. - Kenneth Nickels	WDNR - Steve LaValley	letter & reports
23	1	2/28/97	Next management steps	WDNR - Mark Stokstad	WDNR - Gary LeRoy, Gary Kulibert	email
24	26	3/6/97	comments on (SIR) Sediment Investigation Reports - other sites	WDNR - Tom Janisch	WDNR - Jim Reyburn	memo
50	1	3/13/97	3/14 conference call items	WDNR - Mark Stokstad	WDNR - Bill Smith	e-mail copy
51	1	3/13/97	3/14 conference call items	WDNR - Bill Smith	WDNR - Mark Stokstad	e mail copy
52	1	3/17/97	Ashland/NSP update meeting	WDNR - Gary LeRoy	WDNR - Jamie Dunn	e mail copy
53	1	3/20/97	NSP/Ashland MPG site update meeting	WDNR - Jamie Dunn	Team Members	memo
54	1	4/2/97	Request for Draft report from SEH	NSP - John Wilson	WDNR - Deb Johnson	Letter
55	2	4/3/97	Email Re: Tech Teams	WDNR - Jamie Dunn	WDNR - Gary Kulibert	Email
57	1	4/4/97	NAPL Evaluation	SEH - Jeff C. Steiner	WDNR - Jamie Dunn	letter
58	2	4/11/97	Response to 4/2 letter: Request for Draft report from SEH	WDNR - Deb Johnson	NSP - John Wilson	letter
60	10	4/14/97	Memo and unsoliced info on recycling of coal tar residue	WDNR - Bob Strous	Con Eco - Don Kirchoff	memo & info
70	8	4/17/97	Draft Technical Team Overview	WDNR - Jamie Dunn	WDNR - Gary Kulibert	memo and attchmnt
78	1	4/25/97	Sanitary Pumpout Facility answer to request for time extension	WDNR - Phil Wallace	City of Ashland - Tony Murphy	letter
79	3	5/13/97	Thank you letter and comments on meeting held regarding Ashland MPG Site	NSP - John Wilson	WDNR - Mark Stokstad	letter
82	9	5/16/97	Response to SEH Draft Comprehensive Environmental Investigation Report 5/97	NSP - James Musso	WDNR - Gary Kulibert	letter
91	12	5/23/97	SEH Response to NSP's comments on (above) CEI 5/97 Report	SEH - Cy Ingraham	WDNR - Jamie Dunn	letter
103	1	6/13/97	Notification - Environmental Report Available for public viewing	WDNR - Jamie Dunn	File	News Release
104	1	6/13/97	Memo Re: Abandoned Ashland WWTP Discharge	WDNR - Jamie Dunn	WDNR - Ted Smith	Memo
105	1	6/16/97	Memo Re: Abandoned Ashland WWTP Discharge	WDNR - Jamie Dunn	WDNR - Ted Smith	memo
106	4	6/23/97	Old wastewater treatment plant discharge	WDNR - Jamie Dunn	City of Ashland - Tony Murphy	letter and analytical data reports
110	1	6/25/97	Memo Re: Feasibility Study Work Plan Meeting	WDNR - Jamie Dunn	DNR staff	memo
111	7	7/1/97	Discussion Points for conference call	WDNR - Tom Janisch	WDNR - Jamie Dunn	Fax
118	3	7/2/97	Meeting Agenda July 2, 1997	SEH - Cy Ingraham	file	memo
121	3	7/3/97	Memo Re: Sources of info on the Ashland Harbor/Dr. Kurt Smude	WDNR - Tom Janisch	SEH - Cy Ingraham	memo and email
124	9	7/7/97	Memo Re: Ecological Risk Assessment	WDNR - Tom Janisch	WDNR - Jim Amrheim	Memo
133	1	7/17/97	Letter Re: Meeting on July 2	NSP - James Musso	WDNR - Jamie Dunn	Letter
134	5	7/18/97	Letter Re: Scope of Work and Schedule	Dames & Moore - David Trainor	WDNR - Jamie Dunn	Letter
139	9	7/24/97	Letter Re: comments on proposed ERA	Dames & Moore - David Trainor	WDNR - Jamie Dunn	Letter
148	3	7/25/97	Memo Re: Possible Ambient Air Emissions	WDHSS - Henry Nehls-Lowe	WDNR - Jamie Dunn	Memo

151	7	8/4/97	Final: Amendment to Proposed RA	SEH - Cy Ingraham	WDNR - Jonathon Young Eagle	Letter
158	1	8/21/97	Receipt of Contract for the Feasibility study	SEH - Cy Ingraham	WDNR - Jonathon Young Eagle	Cover letter
159	1	8/28/97	Follow up on fish studies	WDNR - Tom Janisch	WDNR - Jamie Dunn	email
160	2	9/3/97	Email Re: Daily Project Status Report	WDNR - John Guhl	WDNR - Jamie Dunn	email
162	4	9/11/97	memo Re: Test well #1 Hodgkins Park	WDNR - Chris Saari	WDNR - Jamie Dunn	Memo
166	1	9/24/97	Coal Gas Consistancy Meeting	WDNR - Jamie Dunn	WDNR - 7	Memo
167	2	9/25/97	Letter Re: Insurance coverage LSDP	St.Paul Fire/Marine Ins. - Maureen Georgou	WDNR - Jamie Dunn	Letter
169	1	10/17/97	Memo Re: cover for draft letters	WDNR - Mark Stokstad	WDNR - Gary Kuliber	memo
170	1	11/3/97	Comprehensive Well Sampling Proposed 12/97 Round	SEH - Cy Ingraham	WDNR - Jamie Dunn	Letter
171	1	11/13/97	September 25 letter and copy request	St.Paul Fire/Marine Ins. - Maureen Georgou	WDNR - Jamie Dunn	Letter
172	2	11/20/97	(RP) Responsible Party notification to NSP	WDNR - Janet Kazda	NSP - James Musso	Letter
174	2	11/20/97	(RP) Responsible Party notification to Ashland	WDNR - Janet Kazda	City of Ashland - Tony Murphy	Letter
176	2	11/20/97	(RP) Responsible Party notification to WCL	WDNR - Janet Kazda	WI Central Ltd. - Geoffrey Nokes	letter
178	1	11/24/97	Final (RAO) Remedial Actions Options Report-Ravine & Aquifer	WDNR - Jamie Dunn	NSP - James Musso	letter
179	1	11/24/97	Follow up letter regarding 11/19 Insurance Conversation	St.Paul Fire/Marine Ins. - Maureen Georgou	WDNR - Jamie Dunn	Letter
180	4	12/3/97	Response Comments to RP notification	NSP - James Musso and John Wilson	WDNR - Janet Kazda	Letter
184	2	12/10/97	(RP) Responsible Party notification	WDNR - Janet Kazda	WI Central Ltd. - Geoffrey Nokes	letter
186	3	12/12/97	Access to WI Central (ROW) Right of Way	WDNR - Linda Meyer	WI Central Ltd. - Michael Barron	Letter
189	3	12/16/97	Summary of comments on 9-16-96	SEH - Gloria Chojnacki	WDNR - Jamie Dunn	Memo

Ashland Lakefront Property-BBRT's #02-02-000013						
January 1998-April 1998						
PG #	**# Pgs**	**Date**	**Description**	**Author**	**Recipient**	**Item**
3	8	1/1/98	Draft-ARARs & Info TBC	SEH	DNR	Table 1
11	1	1/13/98	Agenda for Technical Team meeting 1/26/98	WDNR - Jamie Dunn	All interested parties	memo
12	2	1/15/98	Plan to prepare Remedial Action Plan Lower Copper Falls Formation Aquifer	Dames & Moore - David Trainor	WDNR - Jamie Dunn	letter
14	1	1/16/98	Invitation to (NRDA) Nat'l Resources Damage Assessment Investigation	Bad River Band - Ervin Soulier	Governor - Tommy Thompson	letter
15	1	1/20/98	Response to (RP) Responsible Party Status	WDNR - Mark Stockstad	NSP - Jim Musso & John Wilson	letter
16	1	1/27/98	Conditional Approval-Plan to prepare (RA) Remedial Action Plan	WDNR - Jamie Dunn	NSP - Jim Musso	letter
17	2	1/27/98	Agenda for discussion toward multi-party settlement	WDNR - Mark stockstad	NSP - Jim Musso	letter
19	2	1/28/98	Schroeder Lumber Co., Lumber Treatment Allegation w/ Newspaper article dated 12/19/36	WDNR - Jamie Dunn	File	memo w/ attached article
21	9	2/4/98	Response to 10/18/95 letter & information summital at 10/23/95 meeting	WDNR - Jamie Dunn	NSP - James Musso	letter w/ attachments
30	3	2/5/98	Brownfield Funding Options	WDNR - Terry Koehn	WDNR - Mark Stockstad	e-mails
33	3	2/9/98	Ashland Plan Sheets & Plats	WDNR - Becky Ierace	NSP, WCL, City of Ashland	mailing memos
36	2	2/16/98	Multi-Party Settlement discussion meeting 2/16/98 agenda w/ meeting registry		file	meeting attndees
38	14	2/18/98	(ERA) Eco Risk Assessment preliminary analytical & macroinvertebrate results	SEH - Jeff Steiner	WDNR - Tom Janisch	Tables
52	1	2/23/98	Technical team meeting setup	WDNR - Jamie Dunn	NSP -James Musso	Fax
53	1	2/24/98	Technical team meeting setup	WDNR - Jamie Dunn	Jim Musso & others	memo
54	3	2/24/98	Potential Remediation Options	Earth Fax Engineering	City of Ashland - Tony Murphy	letter
57	4	2/24/98	WDNR Response to D&M Coal Tar Production Calculations	WDNR - Jamie Dunn	NSP - James Musso	Letter
61	1	2/25/98	Conditional approval-Plan to Prepare a (RA) Remedial Action Plan	WDNR - Jamie Dunn	NSP -James Musso	letter
62	6	3/2/98	Response to WDNR - D&M Coal Tar Production Calculations (2/20/98) & (2/24/98) Ammendment	Dames & Moore - David Trainor	WDNR - Jamie Dunn	letter w/ attachments
68	8	3/3/98	Response to WDNR Response letter 2/4/98 regarding 1995 liability info	NSP -James Musso	WDNR - Jamie Dunn	Letter
76	8	3/3/98	Fish use of area between Soo Line & Marina	WDNR - Dennis Pratt	EVS Consultants - Bob Stuart	letter w/ attachments
84	1	3/6/98	Fish tissue testing	WDHSS - Henry Nehls-Lowe	WDNR - Jamie Dunn	memo
85	2	3/10/98	Comprehensive (GW) Groundwater Sampling Proposed 3/98 Sampling Round	SEH - Cy Ingraham	WDNR - Jamie Dunn	letter
87	2	3/19/98	clarification of 2/16/98 metting	WDNR - Mark Stockstad	NSP -James Musso	letter
89	9	3/19/98	Boring Logs & Borehole Abandonment Forms	SEH - John Guhl	WDNR - Jamie Dunn	abandonment forms
98	2	3/20/98	Notice of Violation	WDNR - Mike Michaelsen	NSP - James Musso	letter
100	1	3/23/98	Tech Team Meeting & Agenda	WDNR - Jamie Dunn	Jim Musso & others	memo (fax)
101	21	3/24/98	Exploration Trench Activities & Findings	Dames & Moore	Jim Musso & others	letter w/ attachments of photos

122	4	3/24/98	Verification & Clarification of reciept of SEH's Supplmental Investigation Report	WDNR - Jamie Dunn	Jim Musso & others	letter
126	4	3/25/98	Response to Notice of Violation	NSP - John Wilson	WDNR - Mike Michaelsen	letter
130	1	3/25/98	Kreher park Tech Meeting (3/26/98)	WI Central Ltd. - Geoffrey Nokes	WDNR - Jamie Dunn	letter
131	15	3/26/98	HHRA-Human Health Risk Assessment - Exposure Assumptions	SEH - Cy Ingraham	Tech Team Members	report
146	4	3/30/98	Response to DNR's Letter on 03/24/98	NSP -James Musso	WDNR - Jamie Dunn	letter
150	1	3/30/98	Client Satisfaction Assesment Program	SEH - Yvonne Bergman	WDNR - Jamie Dunn	Letter
151	1	4/8/98	Receipt of Remedial Action Plan Copper Falls Aquifer	Dames & Moore - David Trainor	WDNR - Jamie Dunn	cover letter
152	9	4/9/98	Response Comments HHRA Exposure Assumption	Dames & Moore - David Trainor	SEH - Cy Ingraham	letter
161	1	4/10/98	Remedial Action Plan _Copper falls Aquifer	Dames & Moore - David Trainor	WDNR - Jamie Dunn	letter
162	1	4/10/98	Remedial Action Plan _Copper falls Aquifer	WDNR - Jamie Dunn	NSP -James Musso	letter
163	7	4/24/98	ERA Problem Formulation report (Fig #3)	SEH - Cy Ingraham	WDNR - Jamie Dunn	tables
170	6	4/27/98	Comments to SEH-Supplemental investig Rep	Dames & Moore - David Trainor	NSP -James Musso	letter
176	1	4/28/98	Technical comments to (SIR) Supplemental Investigation Report 3-98	NSP -James Musso	WDNR - Jamie Dunn	cover letter

Ashland Lakefront Property-BBRT's #02-02-000013 May 1998-December 1998						
PG #	**# Pgs**	**Date**	**Description**	**Author**	**Recipient**	**Item**
3	1	5/4/98	Receipt letter for Remedial Action Plan-Lower Copper Falls Formation Aquifer	WDNR - Jamie Dunn	NSP - James Musso	Cover Letter
4	1	5/4/98	Receipt letter for Supplemental Investigation Work Plan Addendum	WDNR - Jamie Dunn	NSP - James Musso	letter
5	9	5/20/98	Draft Proposed Spill response Agreement	WDNR - Howard Druckenmiller	NSP, WCL, City of Ashland	letters
14	5	5/22/98	Preliminary Analytical Results	En Chem, Inc	SEH	test results
19	6	6/22/98	Final - Signed Spill response Agreement	WDNR - George Meyer	NSP - John Wilson	contract
25	1	6/29/98	Human Health Risk Assessment Review	WDHSS - Henry Nehls-Lowe	WDNR - Jamie Dunn	letter
26	2	6/29/98	Follow up on phone call (6/23)	Michael Best & Friedrich - Linda Bochert	WDNR - Linda Meyer	letter
28	2	7/6/98	Letter to Ashland Mayor - Signed approval for warning signs	NSP - James Musso	City of Ashland - Lowell Miller	Letter
30	7	7/6/98	Notification - Public Health Assess for Kreher Park meeting 7/23/98	WDNR - Jamie Dunn	File	news release
37	1	7/7/98	Thanks for news clipping	WDNR - Bill Smith	WDNR - Jamie Dunn	e-mail
38	9	7/10/98	Fencing Plan	Dames & Moore - Dave Trainor	WDNR - Jamie Dunn	Proposed Plan
47	1	7/15/98	Re: Copies of NSP/DNR Spill Response Agreement	Michael Best & Friedrich - Linda Bochert	WDNR - Linda Meyer	Cover Letter
48	2	7/20/98	Preliminary Comments on (HHRA) Baseline Human Health Risk Assessment	Dames & Moore - Dave Trainor	WDNR - Jamie Dunn	letter
50	1	7/20/98	Conditional Fencing Plan Approval	WDNR - Jamie Dunn	NSP - James Musso	letter
51	11	7/22/98	Proposed Work Plan Supplemental Site Investigation	Dames & Moore - Dave Trainor	WDNR - Jamie Dunn	letter
62	3	7/24/98	Interoffice memo & News article	WDNR - Chris Saari	WDNR - Jamie Dunn	News Article
65	1	7/28/98	Public Comment Sheet	Ashland Citizen - Alan Ralph	File	Letter
66	2	7/28/98	Signed Written Agreement for expansion of Seep fencing	NSP - James Musso	City of Ashland - Lowell Miller	letter
68	1	7/28/98	Ashland Shoreline Site Observation	WDNR - Mike Michaelson	DNR	Activity Report
69	2	7/29/98	Approval request for add'l fencing for "Seep" area	NSP - James Musso	WI Central Ltd. - Geoffrey Nokes	letter
71	3	7/29/98	Fencing Plan Approval Confirmation letter regarding 7/23/98 discussion	Dames & Moore - Dave Trainor	WDNR - Jamie Dunn	letter
74	5	8/13/98	Draft WCL Access Agreement	NSP-LeRoy Wilder	WDNR - Jamie Dunn	letter w/ attachments
79	2	8/14/98	Conditional Aproval for (SI) Supplemental Investigation Proposed Work Plan	DNR-Jamie Dunn	NSP - James Musso	letter
81	11	8/18/98	Copy request for some missing documents	Michael Best & Friedrich - Renee Exum	WDNR - Jamie Dunn	e-mail
92	5	8/27/98	Addendum to (SI) Supplemental Investigation Work Plan	Dames & Moore - Dave Trainor	WDNR - Jamie Dunn	letter
97	2	9/1/98	Bouys Approval	9th Coast Guard Dist	NSP-LeRoy Wilder	faxed letter
99	3	9/1/98	WDNR & NSP meeting confirmation (10/22/98) regarding responsibility issues	Michael Best & Friedrich - Linda Bochert	WDNR - Stan Druckenmiller	letter
102	1	9/3/98	Ashland County Board Ordinance	NSP-LeRoy Wilder	Ashland Cty Admin - Tom Kleweg	letter
103	2	9/11/98	Meeting Confirmation Letter for 10/22/98	WDNR - Stan Druckenmiller	Michael Best & Friedrich - Linda Bochert	letter
105	2	9/14/98	Public Records Request	Michael Best & Friedrich - Linda Bochert	WDNR - Linda Meyer	letter
107	8	9/15/98	Public Records Request	Attny MTF&N	WDNR	letter
115	32	9/22/98	Soil Boring Logs	Dames & Moore - Dave Trainor	NSP	Boring Logs
147	2	9/21/98	Proposed Scope of Work & Costs for collection of soil & water samples for PCB Investigation	SEH - Cy Ingraham	WDNR - Jamie Dunn	letter
149	35	9/24/98	Proposed Lease for WCL Property	Michael Best & Friedrich - Linda Bochert	WI Central Ltd - Mike Barron	letter w/ attachments
184	8	9/30/98	Comments on Draft (ERA) Ecological Risk Assessment 9/98	WDNR - Tom Janisch	SEH - Mark Broses	Memo

192	2	10/15/98	Request for Freedom of Information Act	Attny Lord, Bissell, & Brook	WDNR	letter
194	2	10/15/98	"lay-terminology" of SEH report	WDNR - Marty Jennings	WDNR - Jamie Dunn	letter
196	5	10/19/98	Interviews-Tom Nelson, Ed VanVlack, & Gordon Parent	WDNR - Randal Falstad	File	Activity Report
201	2	10/22/98	Draft Summary of Ecological Risk Assessment		file	summary
203	3	10/22/98	Draft - 1st Response to 9/14/98 Public Records Request	WDNR - Linda Meyer	Michael Best & Friedrich - Linda Bochert	letter
206	3	10/23/98	Significant Impacts & Risks	WDNR - Tom Janisch	Interested Citizens	letter
209	17	11/2/98	WCL (Railroad) Property Lease	Michael Best & Friedrich - Linda Bochert	WI Central Ltd - Mike Barron	letter w/ attachments
226	7	11/6/98	Excavated 2" Pipe Analysis	NSP - James Musso	WDNR - Jamie Dunn	letter w/ attachments
233	2	11/19/98	Update letter Re: Spill Response Agreement	Michael Best & Friedrich - Linda Bochert	WDNR - Linda Meyer	letter
235	17	12/1/98	2nd Response to 9/14/98 Public Records Request	WDNR - Linda Meyer	Michael Best & Friedrich - Linda Bochert	letter w/ attachments
252	2	12/4/98	Public Records Request	Attny MTF&N	WDNR - Jamie Dunn	letter
254	7	12/4/98	Gas and Tar Production & Release Estimates	Dames & Moore - Dave Trainor	Michael Best & Friedrich - Dave Crass	research report
261	7	12/7/98	Preliminary Comments on WDNR Ecological Risk Assessment	NSP - James Musso	WDNR - Jamie Dunn	letter w/ attachments
268	1	12/8/98	Notification of delivery of SEH Final (FS) Study & (SPA) Schedule change	WDNR - Linda Meyer	Michael Best & Friedrich - Linda Bochert	letter
269	9	12/16/98	Interview w/ John Pero, Clarence Eaton, Linda Meyer, & Wayne Carlson	WDNR - Randal Falstad	file	Activity Rep.
278	1	12/18/98	"Study Identifies Options for Contamination at Kreher Park"	WDNR - Jamie Dunn	file	news release
279	21	12/18/98	Supplemental Investig. Analysis Results	Dames & Moore - Dave Trainor	WDNR - Jamie Dunn	letter w/ attachments
300	38	12/22/98	WDNR Response Comments to 12/98 NSP Comments on 10/7/98 Ecolog. Risk Asmt.	WDNR - Tom Janisch	WDNR - Jamie Dunn	letter

Ashland Lakefront Property

January 1999-April 1999

PG #	# Pgs	Date	Description	Author	Recipient	Item
3	5	6/21/05	Ashland Lakefront Project Pamphlet	NSP	DNR	Pamphlet
8	1	1/4/99	Verification of completion of parts of Spill Response Agreement	NSP - LeRoy Wilder	WDNR - Linda Meyer	letter
9	4	1/13/99	Review of 12/98 Remediation Action Options Feas. Study	WDNR - Tom Janisch	WDNR - Jamie Dunn	letter
13	1	1/14/99	RE: Information Request	WDNR - Rebecca Ierace	LB&B - Frank Slepica	letter
14	1	1/15/99	Potential for PCB Releases (Draft)	WDNR - Jamie Dunn	NSP - Jim Musso	letter
15	2	1/19/99	Potential for PCB Releases (Hard Copy)	WDNR - Jamie Dunn	NSP - Jim Musso	letter
17	5	1/20/99	Considerations in deriving Sediment Quality Objectives for TPAHs to protect Aquatic Eco.	WDNR - Tom Janisch	WDNR - Jamie Dunn	letter w/ attachments
22	1	1/20/99	NSP Prelim. Comments-WDNR Eco. Risk....	WDNR - Jamie Dunn	NSP - Jim Musso	letter
23	1	1/21/99	Fee Rule	WDNR - Jamie Dunn	NSP - Jim Musso	letter
24	9	1/22/99	Fish Tissue test results	State Lab of Hyg.	WDNR - Jamie Dunn	tables
33	1	1/22/99	PCB Info request	NSP - Jim Musso	WDNR - Jamie Dunn	letter
34	1	1/22/99	"Public Meeting to Discuss Ecological Risk Assesment and Feasibility Study on Ashland.."	WDNR - Jamie Dunn	file	News Rel.
35	2	1/25/99	#NSD-05644-064 Final Data for Samples	PTS Laboratory	Dames & Moore - Jim Kang	letter w/tables
37	3	1/28/99	Remediation Actions Options feasibility Study	City of Ashland - Tony Murphy	WDNR - Jamie Dunn	memo
40	4	1/28/99	Copy work Billing	WDNR - Rebecca Ierace	WDNR - Jamie Dunn	letter
44	1	1/29/99	Work Plan for selecting A Remedy...	Gary Kulibert	WDNR - Jamie Dunn	e-mail
45	8	1/29/99	Request for more information	Meissner - Christine Wittkopp	WDNR - Rebecca Ierace	letter w/ attachments
53	2	2/3/99	Public Records Request	Michael Best & Friedrich - Linda Bochert	WDNR - Deb Johnson	letter
55	1	2/4/99	Public Records Request	WDNR - Mark Stockstad	Michael Best & Friedrich - Linda Bochert	letter
56	1	2/4/99	NSP To Update Area on Lakefront Project	City of Ashland - Tony Murphy	S.E.H. - Cy Ingraham	newspaper article
57	1	2/8/99	Public Records Request	Michael Best & Friedrich - Linda Bochert	WDNR - Mark Stockstad	letter
58	1	2/16/99	Confirmation NSP will submit a workplan (WP) on PCB Analysis	Dames & Moore - David Trainor	WDNR - Jamie Dunn	letter
59	5	2/18/99	Interviews of Tom Roy & John Selner w/ maps	NSP - Jim Musso	WDNR - Jamie Dunn	letter w/ attachments
64	1	2/23/99	Public Participation Plan	WDNR - Jamie Dunn	DNR - 4	inter. Memo
65	9	2/25/99	Comments on result of PAH Analysis of fillets	WDNR - Tom Janisch	WDNR - Jamie Dunn	inter. Memo
74	12	3/1/99	Additions to 2/25/99 Comment Memo	WDNR - Tom Janisch	WDNR - Jamie Dunn	inter. Memo
86	2	3/8/99	Payment letter and copy of check	NSP - Jim Musso	WDNR - Jamie Dunn	letter
88	2	3/22/99	Request for more information	Northland College - Sonya Welter	WDNR - Jamie Dunn	e-mail
90	61	3/30/99	Request for Criteria w/ Baseline Human Health Risk Assessment attached	WDNR - Dave Daniels	Ashland NSP/ MGP RR Team	letter & Report
151	12	3/30/99	Final report: Peer review of MGP Calculations & Resume of Allen Hatheway	Geological Eng. - Allen Hatheway	Michael Best & Friedrich - David Crass	letter w/ attachments
163	4	3/31/99	meeting issues	DNR	DNR	e-mails
167	8	4/2/99	PCB Testing Work Plan	Dames & Moore - David Trainor	WDNR - Jamie Dunn	letter w/ attachments
175	34	4/2/99	Rebuttal to WDNR Risk Assess. Comments	Dames & Moore - David Trainor	Jamie Dunn & Jim Musso	letter & Report
209	17	6/21/05	Qualifications of Weldon S. Bosworth, Ph.D., Darrel Jon Lauren, Ph.D., & Robert Quinlan	Dames & Moore	file	Qualificatns

226	48	4/9/99	DRAFT: Project Communications Plan & DRAFT Remedy Selection Plan	WDNR - Dave Daniels	Ashland NSP/ MGP RR Team	letter w/ attachments
274	11	4/12/99	Billing for copy request	Meissner - Christine Wittkopp	WDNR - Jamie Dunn	letter w/ attachments
285	1	4/12/99	RE: The Collection of Water Samples	Bay Area North Guard!	Geaorge Meyer, DNR Secretary	letter
286	9	4/19/99	Review of Potential Chemical-Specific and Action-Specific Applicable or Relavent and Appropriate Requirements (ARARs) and Info to Be Considered (TBC)	S.E.H.	file	tables
295	1	4/29/99	Conditional approval of PCB Testing Work Plan	WDNR - Jamie Dunn	NSP - Jim Musso	letter

Ashland Lakefront Property

May 1999-August 1999

PG #	# Pgs	Date	Description	Author	Recipient	Item
2	88	5/12/99	Bureau of Watershed Comments on 5/1/99 ERA	WDNR - Tom Janisch	WDNR - Jamie Dunn	Report
90	2	5/18/99	Remedial Project Approval Scope Recommendation	Ashland/NSP Tech Team	Ashland NSP/ MGP RR Team	letter
92	12	5/21/99	Ashland Lakefront Project Draft Criteria (including Federal Requirement Charts)	WDNR - Franc Fennessy	NSP - John Wilson	letter w/ attachments
104	7	5/24/99	Policy decisions	WDNR - Dave daniels	Ashland NSP/ MGP RR Team	letter & drafts
111	12	6/25/99	WDNR Remedy Selection "White Papers"	NSP - John Wilson	WDNR - Franc Fennessy	letter
123	6	6/30/99	DRAFT Remedy Selection Criteria	NSP - Jim Musso	WDNR - Jamie Dunn	letter w/ attachments
129	10	7/15/99	Following up on Sediment Sampling Results off of the C.R. Reiss Coal Dock-Ashland	WDNR - Tom Janisch	WDNR - Nancy Larson	letter w/ attachments
139	3	7/20/99	Assessing Kreher Park for Superfund Funding	WDHSS - Henry Nehls-Lowe	WDNR - Jamie Dunn	letter
142	23	7/21/99	Supplemental PCB Site Investigation Results w/tables, wells, & other figures	Dames & Moore - David Trainor	WDNR - Jamie Dunn	letter w/ attachments
165	4	7/27/99	Affidavits of John Selner, & Tom Roy	WDNR - Deb Johnson	WDNR - Jamie Dunn	affidavits
169	10	7/29/99	1999 (SSI) Supplemental Site Investigation Work Plan	Dames & Moore - David Trainor	WDNR - Jamie Dunn	letter w/ attachments
179	2	8/4/99	Ranking Request For Superfund Consideration	Bay Area North Guard!	WDNR - Jamie Dunn	letter
181	4	8/4/99	Comments on Ashland MGP Contamination	City of Ashland - Tony Murphy	WDNR - Jamie Dunn	letter
185	2	8/5/99	Conditional Approval for (SSI) Supplemental Site Investigation Work Plan	WDNR - Jamie Dunn	NSP - Jim Musso	letter
187	7	8/6/99	Formal responses to DRAFT Review Comments WDNR Review of NSP Supplemental Invest. Report	Dames & Moore - David Trainor	WDNR - Jamie Dunn	letter w/ attachments
194	5	8/10/99	Comments on Remedial Option Selection Matrix	NSP - Jim Musso	WDNR - Dave Daniels	letter
199	12	8/20/99	Notes from conference call (8/20/99)	WDNR - Mark Stockstad	WDNR - Jamie Dunn	notes
211	2	8/20/99	Comments on Draft Criteria for Remedy Selection	TOSC	Ashland NSP/ MGP RR Team	e-mail
213	3	8/20/99	Enhancing Public Participation in Ashland Lakefront Contamination	S.E.H. - Kenneth Bro	WDNR - Jamie Dunn	e-mail
216	3	8/1/99	Health Info for hazardous waste Sites	WI Div of Pub. Hlth	file	fact sheet

Ashland Lakefront Property-BBRT's #02-02-000013						
September 1999 - December 1999						
PG #	**# Pgs**	**Date**	**Description**	**Author**	**Recipient**	**Item**
2	3	9/3/99	Naming of CERCLIS Site	Michael Best & Fr iedrich - David Crass	WDNR - Darsi Foss, Brownfields	letter
5	17	9/14/99	Dames & Moore Ecological risk Assessment	NSP - James Musso	WDNR - Dave Daniels	letter w/ attachments
22	11	9/14/99	Municipal Immunity from CERCLA Liab.	US EPA - Jerry Clifford	Regional Council - Gail Ginsberg	letter
33	1	9/14/99	Letter Re: Naming of CERCLIS Site	M&I Bank - James Ogilvie	WDNR - Dave Daniels	letter
34	1	9/24/99	Clean up Concern Letter	M&I Bank - James Ogilvie	WDNR - Dave Daniels	Letter
35	2	9/30/99	Letter requesting a formal review	NSP - James Musso	WDNR- Jamie Dunn	Letter
37	1	10/1/99	Reply to letter Re: DHFS Fact Sheet	WDHF-Henry Nehls-Lowe	Michael Best & Fr iedrich - David Crass	letter
38	1	10/6/99	Clean up Concern & Opinion Letter	Northern State Bank - Gary Ellefson	WDNR - Dave Daniels	letter
39	1	10/15/99	Submittal of PA/SSI Equivalent Document for Site	WDNR - Robert Amerson, Brownfields	Jeanne Griffin, Early Action Project Manager	letter
40	1	10/18/99	Clean up Concern & Opinion Letter	Russell Korpela, Ashland Chamber of Commerce	WDNR - Dave Daniels	letter
41	2	10/21/99	Thanks to LWV & SOEI	WDNR - George Meyer	LWV & Sig'O	letter
43	8	10/25/99	Copies of letters from 10/19 & 10/21 to Deb Johnson & Henry Nehls-Lowe from MBF	WDNR - Mark Gordon	WDNR- Jamie Dunn	letters
51	9	10/27/99	Fish Tissue Exposure Investigation	WDHF-Henry Nehls-Lowe	WDNR- Jamie Dunn	Report w/Letter
60	1	11/3/99	Clean up Concern Letter	Ashland Area Development - Frank Kempf	WDNR - Dave Daniels	letter
61	2	11/8/99	St. Louis River/Interlake/Duluth Tar Superfund Site	WDNR - George Meyer	MN Pollution Control Agency - K. Studders	letter
63	21	11/11/99	Confirmation of Meeting for 11/18/99 & copies of interviews	WDNR - Deb Johnson	Michael Best & Fr iedrich - David Crass	letter w/ attachments
84	2	11/12/99	Conditional Approval for the Conceptual Interim Measure & Furthur Investigation	WDNR- Jamie Dunn	NSP - James Musso	letter
86	9	11/12/99	Pertinent Agreements & Work Plans Between LWV SOEI & Great Lakes Center (TOSC)	WDNR - Mike Gardener	WDNR- Jamie Dunn	letter w/ attachments
95	1	11/16/99	"NSP to Begin Actions to Clean Up Copper Falls.."	NSP	Media	news release
96	1	11/17/99	Public Meeting on NSP/Ashland Lakefront Site	?	file	agenda
97	18	11/30/99	Groundwater monitoring results (tables) 11/99	Dames & Moore	DNR	tables
115	1	12/1/99	Phone Conversation W/ Allen Hatheway PhD	WDNR - Jamie Dunn	file	record
116	3	12/1/99	Establishment of Team Charges & Membership for Ashland Lakefront Site	WDNR - Mark Giesfeldt	WDNR - Franc Fennessy	letter

Ashland Lakefront Property-BBRT's #02-02-000013						
January 2000-April 2000						
PG #	**# Pgs**	**Date**	**Description**	**Author**	**Recipient**	**Item**
2	2	1/1/00	TOSC Ecological Risk Assessment	TOSC	file	fact sheet
4	9	1/5/00	MGP Article	WGWA Newsletter	WDNR - Jamie Dunn	article
13	3	1/10/00	***EcoSolve 2000***, 1/2000 meeting & field test	Ranazzo Tech Services - Joe Ranazzo	WDNR - Jamie Dunn	letter
16	1	1/11/00	Fact Sheets	WDNR - Mark Gordon	WDNR - Jamie Dunn	e-mail
17	28	1/12/00	Fish Tissue Data	WDHSS - Henry Nehls-Lowe	WDNR - Jamie Dunn	report w/ figures
45	2	1/13/00	Results from 1/13/00 Ashland Community Meeting "Concerns & Questions For Cleanup".	WDNR - Andrew Savaglan	file	Notes
47	2	1/14/00	#104(e) Information Request for Ashland MGP Site	WDNR - Mark Gordon	NSP - Jim Musso	letter
49	19	1/18/00	Tabulated (GW) Groundwater Results	Dames & Moore - David Trainor	WDNR - Jamie Dunn	tables
68	5	1/19/00	Revision of Aug-99 fact sheet	WDHSS - Henry Nehls-Lowe	Michael Best & Friedrich - David Crass	fact sheet
73	3	1/21/00	confirm. Of meeting & map to meeting place	Michael Best & Fr iedrich - David Crass	US EPA - Reiniero Rivera	letter w/ map
76	2	1/25/00	Confirm. & WorkPlan Concurrent Sed Sampl.	Dames & Moore - David Trainor	WDNR - Jamie Dunn	letter
78	2	1/25/00	Confirmation meeting w/ agenda attached	NSP - Jim Musso	WDNR - Jamie Dunn	letter w/ attachments
80	22	2/1/00	Ashland Lakefront Project USEPA Briefing	NSP	WDNR - Jamie Dunn	agenda/ presentation
102	1	2/7/00	letter Re: final version of Comparative Analysis of NAPL Residues from NSP MGP Site	IGT- Diane Saber	NSP - Jim Musso	letter
103	4	2/9/00	Response to DNR for request of info	NSP - John Wilson	WDNR - Jamie Dunn	letter
107	4	2/9/00	organic test request	WDNR - Jamie Dunn	State of WI	form
111	1	2/14/00	Invitation to public meeting	Sig'O Institute	public	memo
112	3	2/17/00	Prelim Review of Human Health Risk Assess. For Ashland NSP MGP Site	TOSC	file	fact sheet
115	63	2/17/00	Comparative Analysis of NAPL Residues From **THE SITE**	Institute of Gas Technology	NSP	Report
178	2	2/17/00	Attesting data validity for analytical results	Dames & Moore - David Trainor	WDNR - Jamie Dunn	letter
180	7	2/28/00	Drinking water Analytical Report	Northern Lake Svc	file	tables
187	2	3/6/00	Confirmation that NSP similarity certifies the data generated by NSP is acceptable	NSP - John Wilson	WDNR - Mark Gordon	letter
189	1	3/8/00	Interim Design-Plans & Specifications	Dames & Moore - David Trainor	WDNR - Jamie Dunn	letter
190	5	3/10/00	copy of test results from June 12, 1996	WDNR - John Prohaska	Ashland City Hall - Dan Maderich	figures
195	2	3/14/00	Executive summary NSP MGP Interim Meas.	Dames & Moore	WDNR - Jamie Dunn	letter
197	1	3/14/00	Announcement of GW (Groundwater) Contamination Meeting	Sig'O Institute - Mike Gardner	Interested Parties	memo
198	14	3/16/00	NSP's Proposed Interim Action Copper Falls Aquifer Presentation	NSP - Jim Musso	file	presentation
212	1	3/20/00	Re: March 14 TOSC concerns w/city of Ashland	WDNR - Bill Smith	WDNR - Jamie Dunn	e-mail
213	15	3/24/00	Sample Results	WI State Lab ...	WDNR - Jamie Dunn	figures
228	1	3/24/00	Interim Remedial Action Plans & Specs	WDNR - Gary Edelstien	WDNR - Jamie Dunn	e-mail
229	1	3/29/00	SEH Requisitions-Justifiaction	WDNR - Jamie Dunn	WDNR - Dave Behn,FN/1	letter
230	24	4/1/00	Pipe Source Investigation and Sampling Scope of Work	WDNR - Jamie Dunn	File	Report
254	2	4/1/00	ERA Fact Sheet	WDNR	file	
256	2	4/6/00	Follow up on Pending Items	WDNR - Mark Gordon	WDNR - Jamie Dunn	letter
258	22	4/6/00	Water Seepage Evaluation	Earth Tech	WDNR - Jamie Dunn	Report
280	2	4/11/00	Conditional Approval (Copper Falls Aquifer)	WDNR - Jamie Dunn	NSP - Jim Musso	letter
282	7	4/13/00	Sample Results-Flowing Well in Kreher Park	WI State Lab....	WDNR - Jamie Dunn	figures
289	2	4/20/00	List of items that have been sent to EPA	Robert Amerson	EPA	e-mail

Ashland Lakefront Property-BBRT's #02-02-000013						
May 2000-July 20(						
PG #	# Pgs	Date	Description	Author	Recipient	Item
3	2	05/00/2000	Human Health Risk Assessment	TOSC	Public	fact sheet
5	1	05/00/2000	Selecting a cleanup remedy	Sig'O Institute	Public	fact sheet
6	4	5/2/00	Site data Package	WDNR - Charlene Khazae	US EPA - Jeanne Griffin	letter
10	5	5/2/00	Superfund Pre-CERCLA Program Sampling Report	WDNR - Jamie Dunn	US EPA	Report
15	1	5/4/00	*EPA Prods Thompson on Ashland Contamination: Lakeshore Could Go On Superfund List &NSP Gains Approval For Treatment Plan*	Ashland Daily Press - Steve Tomasko	File	article
16	6	5/5/00	Response to IGT's February, 2000 Report	WDNR - Mark Gordon	NSP - Jim Musso	letter
22	11	5/8/00	Findings of Fact, Conclusions of Law and Order	PSComm. Of WI	WDNR - Jamie Dunn	letter
33	2	5/15/00	Product Disposal method options for GW Recovery system	Dames & Moore - Kris McKirdy	WDNR - Steve Ashenbrucker	email
35	19	5/18/00	Air discharge calculations for pump & treat	Dames & Moore - David Trainor	WDNR - Jamie Dunn	Submittal
54	2	5/19/00	Letter Re: Interim Coal Tar Remediation Plan	WDNR - Neil Baudhuin	NSP - Jim Musso	Letter
56	21	5/19/00	Request for No Further Action Determination	Earth Tech	WDNR - Jamie Dunn	letter
77	2	5/26/00	schedule for interim action construction	Dames & Moore - David Trainor	WDNR - Jamie Dunn	letter
79	20	5/30/00	Water Seepage Evaluation	Earth Tech	WDNR - Jamie Dunn	Report
99	1	5/31/00	Concurrence Memo	Governor - Tommy Thompson	US EPA - Francis Lyons	letter
100	1	6/9/00	*Boaters & Anglers Cautioned to Stay out....*	WDNR - Jamie Dunn	Public	*news release*
101	4	6/13/00	WDNR'S Comments on IGT's Proposal for Es tar Quantities	WDNR - Jamie Dunn	NSP - Jim Musso	letter
105	5	6/14/00	Pre-proposal to GLNPO for outreach svcs	TOSC	WDNR - Jamie Dunn	letter
110	2	6/15/00	Compliance Issues	WDNR - Jamie Dunn	NSP - Jim Musso	letter
112	2	6/20/00	schedule update for interim action const.	Dames & Moore - David Trainor	WDNR - Jamie Dunn	letter
114	5	6/20/00	Letter Re: IGT Response to letter from DNR Regarding Fingerprinting Analysis	IGT - Diane Saber	NSP - Jim Musso	Letter
119	1	6/22/00	*memo re: railroad info*	WDNR - Christine Robertson	Michael Best & Friedrich David Crass	e-mail
120	13	6/23/00	Comparitive Analysis of NAPL Residues	US EPA	WDNR - Jamie Dunn	letter
133	1	6/26/00	letter to governor	Francis X. Lyons	Governor	letter
134	4	6/27/00	Response to Compliance Issues	Michael Best & Friedrich David Crass	WDNR - Jamie Dunn	letter
138	6	6/28/00	Letter responding to the WDNR Letter of May	NSP - Jim Musso	WDNR - Mark Gordon	letter
144	3	6/29/00	Response to Cities Request for No Further Action	Michael Best & Friedrich David Crass	WDNR - Jamie Dunn	Letter
147	30	7/1/00	Off-Site Discharge Exemption Request Application	WI Central Ltd	WDNR - Jamie Dunn	letter
177	13	7/1/00	Request for No Further Action Determination	WI Central Ltd	WDNR - Jamie Dunn	letter
190	33	7/3/00	Comparitive Analysis of NAPL Residues	IGT - Diane Saber	NSP	Report
223	1	7/5/00	memo re: railroad info	WDNR - Christine Robertson	Michael Best & Friedrich David Crass	Memo
224	4	7/6/00	Interim Action Update	Dames & Moore - David Trainor	WDNR - Jamie Dunn	letter
228	2	7/7/00	Comments on IGT's Proposal for Est. Tar Quant.	NSP - Jim Musso	WDNR - Mark Gordon	letter
230	2	7/10/00	reply to above letter	IGT - Diane Saber	NSP - Jim Musso	letter
232	1	7/10/00	Memo re: Chaequamegon Bay Common Tern Nesting	WDNR - Jamie Dunn	US EPA - Jeanne Griffin	Memo

233	1	7/11/00	Phone Conversation, Dr. Russell Plumb, Re: Fingerprinting NAPLS	WDNR - Jamie Dunn	File	Memo
234	4	7/20/00	Copies of Memos to send rep. received From WCL	WDNR - Christine Robertson	File	Memos
238	2	7/25/00	copies of documents	WDNR - Christine Robertson	Michael Best & Friedrich Renee Exum	Memo/Inv.
240	1	7/27/00	Common Terns	WDNR - Fred Strand	WDNR - Jamie Dunn	memo
241	1	7/27/00	Fishing in Chequamegon bay	WDNR - Stephen Schran	WDNR - Jamie Dunn	memo
242	1	7/28/00	Case Activity Report - Selner Interview	WDNR - Jamie Dunn	File	Report

Ashland Lakefront Property						
August 2000 - December 2000						
PG #	**# Pgs**	**Date**	**Description**	**Author**	**Recipient**	**Item**
2	6	8/4/00	Information Request for Maps	WDNR - Christine Robertson	USEPA - Josephine Williams	Memo w/attach
8	6	8/4/00	Request for Administrative Records	Michael Best & Friedrich - Renee Exum	WDNR - Christine Robertson	Letter
14	1	8/8/00	Letter Re: Requested copies	WDNR - Christine Robertson	Michael Best & Friedrich - Renee Exum	Memo
15	1	8/15/00	Conference call minutes 8/14	NSP - Jerry Winslow	WDNR,URS,MBF,NSP,IGT	Letter
16	2	8/16/00	Letter Re: Obtaining Aerial Photograph	WDNR - Christine Robertson	Special media archive service	Letter
18	1	8/16/00	Response to letter	WI Governor - Tommy Thompson	USEPA - Francis X. Lyon	Letter
19	2	8/23/00	Reply to above letter from Christina Robertson	Nat'l Archives	WDNR - Christine Robertson	Letter
21	20	9/7/00	Ashland Groundwater Monitoring Plan	Dames & Moore - Dave Trainor	WDNR - Jamie Dunn	Letter w/ Report
41	3	9/11/00	Access Permission Form	City of Ashland - Tony Murphy	WDNR - Jamie Dunn	Fax
44	1	9/15/00	Update Request for WCL's No Further Action Determination	STS - Mark Burgeon	WDNR - Jamie Dunn	Letter
45	1	9/29/00	Proposed Interim Remedial Action to Remove Contaminants	WDNR - Jim Bishop		News Release
46	2	10/1/00	Interim Remedial Actions Publication	DNR	File	Info
48	1	10/1/00	National Priorities List	EPA	File	Info
49	60	10/5/00	Demonstration of a Trial Excavation at the McDoll Superfund Site	IT Corporation	File	Info
109	6	10/9/00	Proposal for Consulting Services: Investigation of Seep Area	SEH - Cy Ingraham	WDNR - Jamie Dunn	Letter
115	2	10/11/00	Great Lakes Protection Funding Request	WDNR - Jamie Dunn	WDNR - Al Shea	Memo
117	1	10/12/00	Response memo to Jamie Dunn Great Lakes Funding 10/11/00 Memo	WDNR - Chuck Ledin	WDNR - Jamie Dunn	Memo
118	1	10/13/00	Follow up letter from Oct 5 meeting	NSP - Jerry Winslow	WDNR - Mark Gordon	Letter
119	50	11/1/00	Volumetric Estimates of DNAPL & Total Tar Production W/ Attachments	Diane Saber	NSP - Jerry Winslow	Letter / Report /Attachment
169	3	11/6/00	Identifying (MGP) Residues in Industrial Sediments	McCarthy,Mattingly, Stout, Uhler	Soil Sediment & Groundwater	Article
172	4	11/13/00	Cursory Review of Ashland lakefront property-Contaminated Sediments Ecological Risk Assessment	USEPA - Region 5	USEPA - Jon Peterson, RPM	Letter
176	16	11/15/00	Letter summarizing meeting on Nov 13, 2000	USEPA - Region 5	WDNR-meeting particlpants	Memo w/agenda
192	2	11/17/00	Re: Follow-up Oct 13th regarding Work Plan for interim action Kreher Park.	NSP- Jerry Winslow	WDNR-Mark Gordon	Letter
194	6	11/22/00	Volumetric Estimates of DNAPL & Total Tar Production	NSP- Jerry Winslow	WDNR-Mark Gordon	Letter/ report
200	15	12/13/00	Comments to the EPA Nov 13 comments	WDNR - Tom Janisch	WDNR - Jamie Dunn	Letter

Ashland Lakefront Property - BBRT'S #02-02-000013						
January 2001 - June 2001						
PG #	# Pgs	Date	Description	Author	Recipient	Item
3	13	1/1/01	Microinvertebrate & Fish Bioassay Testing Scope of Work	WDNR - Jamie Dunn	File	SOW
16	3	1/4/01	Request for info on water Utility employees' exposure to hazardous substances	City of Ashland - Carol Larson	AFSCME - James Mattson	Letter
19	2	1/12/01	Letter concerning meeting held Jan 11th	City of Ashland - Tony Murphy	WDNR - John Robinson	Letter
21	1	1/18/01	E-mail concerning letter from Tony Murphy 1-12	WDNR - John Robinson	WDNR - Jamie Dunn	E-mail
22	2	1/22/01	Request for copy of workplan	Xcel - Jerry Winslow	WDNR - Jamie Dunn	Letter
24	10	1/23/01	Preliminary Findings of Human Health concerns regarding cyanide contamination	WDHSS - Robert Thiboldeaux	DNR team	letter
34	8	1/23/01	Transferring info	WDNR - Tom Janisch	WDNR - Jamie Dunn	Letter
42	2	1/24/01	Letter in response to Tony Murphy letter 1-12	WDHSS - Tom Sieger	City of Ashland - Tony Murphy	Letter
44	2	1/26/01	Work Plan Concurrent Sediment Sampling	URS - David Trainor	WDNR - Jamie Dunn	Work Plan
46	2	1/30/01	Letter regarding "Use of Photovoice"	City of Ashland - Tony Murphy	WDHSS - Tom Sieger	Letter
48	7	1/30/01	Letter Re: Ashland/NSP Lakefront Site (Comments regarding the proposed listing of the Site on the Nat'l Priority List)	Xcel - Jerry Winslow	EPA Hdqrs-Docet Cood.	Letters
55	4	2/2/01	Work Plan Supplemental Sediment Investigation	URS - David Trainor	WDNR - Jamie Dunn	Work Plan
59	4	2/6/01	Commets on WCL's (NFA) No Further Action & Exemption Requests	Michael Best & Friedrich - David Crass	WDNR - Jamie Dunn	Letter
63	1	2/7/01	Response to request for Work,Health & Safety Plans	WDNR - Jamie Dunn	Xcel - Jerry Winslow	Letter
64	1	2/13/01	Proposal for Consulting Services Supplemental Solid Phase Sediment Chemical Analysis & Bioassay Testing	SEH - Cyrus Ingraham	WDNR - Jamie Dunn	Cover Letter
65	2	2/13/01	Response to Work Plan Submittal - Concurrent Sediment Sampling	WDNR - Jamie Dunn	Xcel - Jerry Winslow	Letter
67	2	2/13/01	Proposed work plan - Supplemental Sediment Investigation	WDNR - Jamie Dunn	Xcel - Jerry Winslow	Letter
69	6	2/14/01	Soil Boring Log Info	SEH - John Guhl	WDNR - Jamie Dunn	Info
75	2	2/16/01	Email And Signed WCL Access Agreement	WDNR - Jamie Dunn	Jimmy Christenson	Email
77	1	2/16/01	Digging begins 1st phase of Ashland Coal Tar Investigation	WDNR - Jamie Dunn	File	News Release
78	1	2/19/01	Request for info on water & wastewater utility employees' exposure to hazardous substances	AFSCME - John Radloff	WDNR - Jamie Dunn	Letter
79	3	2/23/01	Response to 2/13/01 Supplemental Sediment Investigation	Michael Best & Friedrich - David Crass	WDNR - Jamie Dunn	Letter
82	9	2/23/01	Request to place documents into Vaughn records	Michael Best & Friedrich - Ranee Exum	Vaughn Public Library	Letter w/attachment
91	2	2/23/01	Response to 2/13/01 Concurrent Sediment Sampling	Michael Best & Friedrich - David Crass	WDNR - Jamie Dunn	Letter
93	13	2/23/01	Leachate Fingerprinting-work up of past activities	Lockheed Tech Service - Dr. Russell Plumb Jr.	WDNR - Jamie Dunn	Letter w/attachment
106	8	2/27/01	Sediment Sampling Observation	SEH - John Guhl	WDNR - Jamie Dunn	Contract
114	3	3/2/01	EPA Comments on CA Application		File	Letter
117	2	3/7/01	Response to Conversation in Ashland on February 28 regarding trenching	Xcel - Jerry Winslow	WDNR - Jamie Dunn	Letter
119	1	3/8/01	Regarding Xcel's sediment sampling	WDNR - Jamie Dunn	Xcel - Jerry Winslow	Email
120	5	3/22/01	Seep Area - Interim Measures	WDNR - Jamie Dunn	Xcel - Jerry Winslow	Letter
125	3	3/28/01	Response to DNR's 3/22/01 letter	Xcel - Jerry Winslow	WDNR - Jamie Dunn	Letter
128	2	4/2/01	Request for Ashland Lakefront Site File Review	Michael Best & Friedrich - Ranee Exum	WDNR - Jamie Dunn	Faxed Letter
130	45	4/11/01	2nd Addendum - Ashland GTI report on the 2 samples collected in the seep trenches & META Forensic report	Xcel - Jerry Winslow	WDNR - Jamie Dunn	Report

175	1	4/24/01	CD-ROM of Ashland/NSP Correspondences	WDNR - Rhonda Cousins	Michael Best & Friedrich - Ranee Exum	Letter
176	1	4/24/01	CD-ROM of Ashland/NSP Correspondences	WDNR - Rhonda Cousins	Attny Habush - Jim Weis	Letter
177	1	4/24/01	Tom Janish's Final Comments Ecol. Risk Asses.	WDNR - Rhonda Cousins	TOSC - Kirk Riley	Letter
178	11	5/1/01	Pipe Source Investigation & Sampling	WDNR - Jamie Dunn	SEH - Cy Ingraham	SOW
189	20	5/1/01	3rd Addendum - Comparative Analysis of 10 Sediment Samples, GTI Project #: 40453-01	GTI - Diane Saber	NSP Co.	Report
209	4	5/4/01	DNR's response to Xcel's March 28 Letter	WDNR - Jamie Dunn	Xcel - Jerry Winslow	Letter
213	17	5/7/01	Draft -104(e) Requests for information	Michael Best & Friedrich - David Crass	WDNR - John Robinson	Request
230	25	5/14/01	Review of SEH's & URS Assessments of Contaminated Offshore Sediments	TOSC - Christopher Marwood	File	Report
255	3	5/25/01	Work Plan to investigate wooden box culverts identified in recent investigation of seep area	URS - David Trainor & Mark McCulloch	Xcel - Jerry Winslow	Letter
258	4	5/25/01	Response to DNR's 5/4/01 letter & Proposed Work Plan	Xcel - Jerry Winslow	WDNR - Jamie Dunn	Letter & Work Plan
262	16	6/1/01	Work/Quality Assurance Project Plan	Battelle	WDNR - Jamie Dunn	SOW
278	1	6/4/01	Enclosed to be signed is the Pipe Source Investigation Conract	WDNR - Jonathon Young Eagle	SEH - Cyrus Ingraham	Cover Letter
279	2	6/14/01	Response to excel's letter dated 5/25/01	WDNR - Jamie Dunn	Xcel - Jerry Winslow	Letter
281	5	6/21/01	Record Clarification/ Response to DNR 5/4/01 letter	URS - David Trainor	WDNR - Jamie Dunn	Letter
286	1	6/27/01	Email thank you of phone conversation on 6/25/01	WDNR - Jamie Dunn	META-David Craig	Email
287	1	6/28/01	Confirmation Letter Re: Direct Contact	Michael Best & Friedrich - David Crass	WDNR - Deborah Johnson	Letter
288	2	6/29/01	Comments & Receipt acknowledgment of June 14, 2001 letter	Xcel - Jerry Winslow	WDNR - Jamie Dunn	Letter

Ashland Lakefront Property-BBRT's #02-02-000013 July 2001 - December 2001						
PG #	# Pgs	Date	Description	Author	Recipient	Item
3	2	7/2/01	GTI Re: Email from Jamie Dunn to David Craig	GTI - Diane Saber	Xcel - Jerry Winslow	Letter
5	23	7/3/01	Re: NSP Co. Petition to Perpetuate Testimony by Deposition	Michael,Best & Friedrich - Jon Furlow	Curcuit Court Service List	Petition Court Hearing
28	38	7/6/01	NSP's Response to Ecological Risk Assessment	NSP	WDNR & USEPA - Region 5	Letter
66	6	7/10/01	Follow-up letter regards to 6/27/01 email by Jamie Dunn to META staff David Craig	Michael, Best & Friedrich - David Crass	WDNR - Deb Johnson	Letter w/attachments
72	3	7/11/01	State's Notice of Appearance	WDNR - Shari Eggleson	Clerk of Curcuit Court	Letter w/notice of appearance
75	9	7/16/01	Enviromental Forensic Analyses	WDNR - David Behn	Battelle - David Sullivan	Contract
84	9	7/16/01	Pipe Source Investigation & Sampling	WDNR - David Behn	SEH - Cy Ingraham	Contract
93	2	7/18/01	Clay tile pipe investigation	WDNR - Jamie Dunn	Xcel - Jerry Winslow	Letter
95	4	8/1/01	Orphan Share White Paper Info	NSP	WDNR	Info
99	4	8/3/01	Revised Estimation of Tar(DNAPL) in the Bay Area Sediments, Ashland Site	GTI-Diane Saber	Xcel - Jerry Winslow	Report Letter
103	1	8/9/01	Notification of Dept. approval for "Future"Site" investigation	WDNR - Deb Johnson	Michael, Best & Friedrich - David Crass	Letter
104	7	8/13/01	Acceptance Superfund Cooperative Aggreement	WDNR - Darrell Bazzell	U.S. EPA R-5	Letter w/attachments
111	7	8/17/01	Work Plan to Perform Pipe Investigation - Buried Ravine Clay Pipe	URS - David Trainor	WDNR - Jamie Dunn	Work Plan Investigation
118	9	8/20/01	Pipe Source Investigation & Sampling Report	SEH - Cy Ingraham	WDNR - Jamie Dunn	Letter Report
127	3	8/21/01	Subject: Pipe & Ravine Fill Contaminant Discharge- Interim Action	WDNR - Jamie Dunn	Xcel - Jerry Winslow	Letter
130	2	8/21/01	Subject: Volumetric Estimate Update	WDNR - Jamie Dunn	Xcel - Jerry Winslow	Letter
132	6	8/29/01	Mgmt.of Ambient Air Releases from Investigation & Remediation at the "Site"	WDHSS - Nehls-Lowe & Thiboldeaux	WDNR - Jamie Dunn	Advice Issues to air releases
138	2	8/30/01	Clarification of Enviromental Liability for Property Located within "The Site"	WDNR - Jamie Dunn	City of Ashland - Tony Murphy	Letter
140	2	9/5/01	Pipe Investigation Work Plan approval	WDNR - Jamie Dunn	Xcel - Jerry Winslow	Letter
142	2	9/12/01	Pipe & Ravine Fill Contaminant Discharge - response letter to WDNR 8/21/01 letter	Xcel - Jerry Winslow	WDNR - Jamie Dunn	Letter
144	2	9/12/01	Work Plan Approval - Pipe Investigation WDNR Letter of 9/5/01	Xcel - Jerry Winslow	WDNR - Jamie Dunn	Letter
146	2	9/13/01	Pipe Source Tracing	Ashland Daily Press	Public	News Article
148	1	9/14/01	Xcel Neighborhood Notice	Xcel Energy		Info Letter
149	1	9/18/01	Excavation on Xcel Energy Property	WDNR - Deb Johnson	Michael, Best & Friedrich	Letter
150	1	9/18/01	Subject: 9/17/01 Site Visit field notes	WDNR - Chris Saarl	WDNR - Jamie Dunn	Email
151	3	9/19/01	Deposition Confirmation 10/16/01	Michael, Best & Friedrich - Jon Furlow	Councel Service List	Faxed Letter Confirmation
154	2	9/21/01	Excavation on Xcel Energy Property	Michael, Best & Friedrich - David Crass	WDNR - Deb Johnson	Letter
156	2	9/25/01	NSP's Buried Pipe Locations & Details	URS - David Trainor	WDNR - Jamie Dunn	Pipe Locations
158	2	9/27/01	2nd Request for Administrative Record CD-Rom	Michael, Best & Friedrich - Renee Exum	WDNR - Jamie Dunn	Faxed Letter
160	3	10/15/01	Re: Courtyard Pipe Investigation work plan	URS - David Trainor	Xcel - Jerry Winslow	Letter
163	3	10/17/01	Volumetric Estimate Update response letter to comment letter from WDNR - Jamie Dunn	GTI-Diane Saber	Xcel - Jerry Winslow	Letter
166	2	10/18/01	Subject: Courtyard Pipe Investigation-Conditional Approval	WDNR - Jamie Dunn	Xcel - Jerry Winslow	Letter
168	6	10/22/01	GTI Volumetric Estimate Update WDNR Letter of August 21, 2001	URS - David Trainor	WDNR - Jamie Dunn	Results Review Letter
174	48	10/25/01	Construction of Interim Remedial Tar Recovery System - Field notes, Photos, Plan Sheet-not scanned in file-49 total pages in the file	URS - David Trainor	WDNR - Jamie Dunn	Letter w/Copies
222	91	10/29/01	10/16/01 Deposition Transcripts - Kucinski, Parent, G.; Parent, R.; Selner	WI Dept of Justice - Shari Eggleson	WDNR - Jamie Dunn	Emailed Depositions
313	6	11/1/01	Pipe Excavation Observation & Sampling Report	S.E.H.	WDNR - Jamie Dunn	Report Letter
319	1	11/2/01	Courtyard Investigation Split Samples for Fingerprinting	URS - David Trainor	WDNR - Jamie Dunn	Letter

Ashland Lakefront Property-BBRT's #02-02-000013						
Jan 2002						
PG #	# Pgs	Date	Description	Author	Recipient	Item
2	3	1/3/02	CA V975604-01 July-Sept Quarterly Report	WDNR - Jamie Dunn	USEPA - Sue Coll	Report
5	12	1/3/02	Phase I & II ESA Scope of Work for Former Schroeder/Kreher Investigation	WDNR - Chris Saari	Xcel - Jerry Winslow	Letter w/report
17	207	1/3/02	Letter to USEPA with Transcripts	Michael, Best & Friedrich - David Crass	USEPA - Craig Melodia	Letter W/Transcripts
224	1	1/11/02	Re: Former Schroeder/Kreher Phase I ESA & Phase II Work Plan	WDNR - John Robinson	File & Xcel - Jerry Winslow	Letter w/report
225	6	1/15/02	Work Plan for Pizeometer Installation	URS - David Trainor	WDNR - Jamie Dunn	Letter
231	2	1/17/02	WDNR Response to 1/3/02 USEPA Letter & Trascripts	WDNR - Deb Johnson	USEPA - Craig Melodia	Letter
233	2	1/24/02	WDNR Response Work Plan for Pizeometer Installation	WDNR - Jamie Dunn	Xcel - Jerry Winslow	Letter
235	12	1/25/02	Interim Guidance on Air Mgmt at former MGP Sites	WDHSS - Henry Nehls-Lowe	WDNR - Jamie Dunn	Letter
247	3	1/29/02	Clarification of Environmental Liability for W.C.L. Property	WDNR - Jamie Dunn	WI Central Ltd - Geoff Nokes	Letter
250	3	1/30/02	Re: Add'l Services	SEH - Cy Ingraham	WDNR - Jamie Dunn	Letter
253	1	1/30/02	Re: Request for change order	SEH - Cy Ingraham	WDNR - Jamie Dunn	Letter
254	2	1/30/02	GTI Sample Request	GTI - Diane Saber	WDNR - Jamie Dunn	Letter

Ashland Lakefront Property-BBRT's #02-02-000013						
February - December 2002						
PG #	# Pgs	Date	Description	Author	Recipient	Item
3	3	2/1/02	CA V975604-01 Oct-Dec Quarterly Report	WDNR - Jamie Dunn	EPA - Sue Coll	Letter
6	6	2/5/02	Work Plan for Additional Pizeometer Installation	URS - David Trainor	WDNR - Jamie Dunn	Letter
12	19	2/14/02	Draft: RI/FS Scope of Work	WDNR - Jamie Dunn	Team Members - Ahland	Letter w/report
31	3	2/25/02	Comments on Proposed Scope of Work	Xcel - Jerry Winslow	WDNR - Jamie Dunn	Letter
34	2	2/28/02	Response to the Clay Tile Discharge	Xcel - Jerry Winslow	WDNR - Jamie Dunn	Letter
36	5	3/1/02	Superfund Cooperative Aggreement #V975604-01	Secretary - Darrell Bazell	USEPA - William Muno	Letter
41	1	3/19/02	WDNR - RR Costs thru Jan 2002	WDNR - Jamie Dunn	File	Costs
42	5	2/19/02	Xcel's Comments on Public Health Assessment (PHA)	Xcel - Jerry Winslow	WDPH-Bureau of Environmental Health	Letter
47	20	3/1/02	Waterfront Development Plan	City of Ashland	WDNR - Jamie Dunn	Plan
67	2	3/21/02	Seep Area "Site Plan - Existing Conditions" Drawing	S.E.H.	file	Email Map
69	2	3/26/02	Addl backup of Eco-Risk Supplement Review	URS - David Trainor	WDNR - Jamie Dunn	Email
71	3	4/2/02	Response to request from city of Ashland - Exposure Concerns	WDHSS - Henry Nehls - Lowe	Ashland City Clerk & Dept of Public Works	Letter
74	2	4/4/02	Commments on Draft RI/FS report Scope of Work	Ashland City Engineer	WDNR - Jamie Dunn	Letter
76	1	4/15/02	WDHSS Comments on Seep Area Interim Action Workplan	WDHSS - Henry Nehls - Lowe	WDNR - Jamie Dunn	Letter
77	2	4/18/02	Data Quality Update URS Sampling & Analysis	URS - David Trainor	WDNR - Jamie Dunn	Letter
79	2	4/19/02	Data Quality Certification	Xcel - John Wilson	WDNR - Mark Gordon	Letter
81	4	4/23/02	Request for participation in Remedial Plan Development	WDNR - Jamie Dunn	Red Cliff & Bad River Tribes	Letter
85	1	4/24/02	Seep Area Work Plan Approval	WDNR - Jamie Dunn	Xcel - Jerry Winslow	Letter
86	5	5/6/02	Work Plan - Former Gas Holder	URS - David Trainor	WDNR - Jamie Dunn	Report
91	25	5/8/02	Xcel's Comments on S.E.H. ERA Supplement Report	Xcel - Jerry Winslow	WDNR - Jamie Dunn	Letter
116	3	5/14/02	CA V975604-01 Jan-Mar Quarterly Report	WDNR - Jamie Dunn	USEPA - Sue Coll	Report
119	3	5/17/02	CSTAG Invitation Letter	USEPA - Jon Peterson	Ashland Stakeholders	Letter
122	1	5/21/02	Work Plan Approval - Former Gas Holder	WDNR - Jamie Dunn	URS - David Trainor	Letter
123	17	6/5/02	Supplemental Information - SEH RI/FS Proposal	SEH - Cy Ingraham	WDNR - Robert Strous, Jr.	Proposal
140	5	6/14/02	(CSTAG) Contaminated Sediment Technical Advisory Group - Managing Contaminated Sediment Risks	Xcel - Jerry Winslow	USEPA - Jon Peterson	Letter
145	6	6/19/02	Notification of 6/14/02 letter to be place in Vaughn Public Library's Admin Records	Michael Best & Friedrich - Renee Exum	Vaughn Public Library - Jim Trojanowski	Letter w/attachments
151	2	6/21/02	Comments on Proposed (SOW) Scope of Work for Public Outreach & Education	Xcel - Jerry Winslow	WDNR - Andrew Savagian	Letter
153	9	6/21/02	Consultant Services for (RI/FS) Remedial Investigation/Feasibility Study	WDNR - David Behn	SEH - Cy Ingraham	Contract
162	1	6/25/02	USEPA's verification letter for 2-20 PAH clean up goals	USEPA - Brenda Jones	WDNR - Jamie Dunn	Letter
163	3	6/28/02	CD distribution - Background Reports 1989 - 2000	SEH - Mark Broses	Natural Resources Trustees	Distribution List
166	12	7/15/02	CSTAG Site Briefing Memo	WDNR - Jamie Dunn	File	Memo
178	4	7/15/02	CSTAG Attendees - Meeting 7/15/02 - 7/16/02		File	Sign-in Sheets
182	3	7/23/02	CA V975604-01 Apr-Jun Quarterly Report	WDNR - Dick Kalnicky	USEPA - Sue Coll	Report
185	2	8/14/02	Substance Release Notification Form	WDNR	File	Form
187	2	8/19/02	Ashland Waterfront Visit	WDNR - John Robinson	WDNR - Darrell Bazzell	Memo
189	2	8/26/02	Contingency Fee Request-Supplemental Solid Phase Sediment Chemical Analysis & Bioassay Testing	SEH - Cy Ingraham	WDNR - Jamie Dunn	Letter
191	5	9/3/02	CSTAG Recommendation	USEPA - Stephen Ells	USEPA - Jon Peterson	Report
196	2	9/7/02	Superfund Listing	Ashland Daily Press	File	News Article
198	1	9/9/02	Records Request	WDNR - Shelly Klitzke	Habush Lawfirm-Marilyn	Letter
199	5	9/10/02	Ltr Re: To Document NSP's Attempt's to Resolution	Michael, Best & Friedrich - David Cress	WDNR - Deb Johnson	Letter
204	1	9/12/02	Superfund Listing	WI State Journal	File	News Article
205	39	9/16/02	Comments on Draft Contaminated Sediments Science Plan	Xcel - Jerry Winslow	USEPA-Docket ID	Letter
244	1	9/19/02	Ltr sent w/9/3/02 Attachment	WDNR - Jamie Dunn	WDHSS - Henry Nehls-Lowe	Letter
245	1	9/19/02	Ltr sent w/9/3/02 Attachment	WDNR - Jamie Dunn	SEH - Cy Ingraham	Letter
246	2	9/19/02	Xcel's CSTAG Comments Press Release	Ashland Daily Press	File	News Article
248	1	9/24/02	Stakeholders Ltr sent w/9/3/02 Attachment	WDNR - Jamie Dunn	Stakeholders	Letter
249	1	9/24/02	Proposed meeting to discuss the CSTAG Recommendations	Xcel - Jerry Winslow	USEPA - Jon Peterson	Letter

250	2	9/26/02	Waste Mgmts Waste Profile Sheet for Waste Disposal from the Site	Waste Management	File	Form
252	3	9/29/02	Confirmation sent w/CD Files on Quarterly Report #007	URS - David Trainor	WDNR - Jamie Dunn	Letter
255	7	10/2/02	RI/FS - Areas of Potential Add'l Investigation (Task 2.3)	SEH - Cy Ingraham	WDNR - Jamie Dunn	Letter
262	4	10/4/02	Xcel Response EPA to Support Document for NPL Listing	Xcel - Jerry Winslow	USEPA - Region V	Letter
266	4	10/15/02	City of Ashland Refusal letter to Xcel regarding the proposed settlement	City of Ashland Mayor - Fred Schnook	Public & Regulatory Affairs - John Wilson	Letter w/attachments
270	11	10/16/02	WDNR Comments to CSTAG Recommendations	WDNR - Jamie Dunn	USEPA - Jon Peterson	Letter
281	1	10/21/02	Notification for Lab Backup Data Validation Sent	URS - David Trainor	Battelle - Stephen Emsbo-Mattingly	Letter
282	3	10/22/02	Minutes of 10/22/02 meeting in Chicago	WDNR - John Robinson	WDNR - Jamie Dunn	Minutes
285	8	10/22/02	Xcel Responses to Selected CSTAG Recommendations	Xcel Energy	EPA - Steve Ells	Letter
293	1	10/24/02	Notification for Lab Backup Data Validation Sent	URS - David Trainor	Battelle - Stephen Emsbo-Mattingly	Letter
294	7	10/24/02	Status Letter #1 7/02 - 9/02 Activities	SEH - Gloria Chojnaiki	WDNR - Jamie Dunn	Status Ltr
301	1	10/30/02	Notification for Lab Backup Data Validation Sent	URS - David Trainor	Battelle - Stephen Emsbo-Mattingly	Letter
302	4	11/4/02	Supplemental Solid Phase Sediment Chemical analysis & Bioassay Testing-PO #9AME0000026 - SEH Invoice #0093067 (Jan - Oct Services)	SEH - Gloria Chojnaiki	WDNR - Jamie Dunn	Invoice
306	4	11/4/02	Summary of Upland Site Investigation Meeting	Xcel - Dave Donovan	WDNR - Jamie Dunn	Minutes
310	3	11/11/02	CA V975604-01 Jul - Sep Quarterly Report	WDNR - Dick Kalnicky	USEPA - Sue Coll	Report
313	1	11/11/02	Thank you Ltr for coordinating 10/22 meeting regarding CSTAG recommends	Xcel - Jerry Winslow	WDNR - John Robinson	Letter
314	2	11/12/02	Thank you Ltr & proposal to CSTAG recommend	Xcel - Jerry Winslow	USEPA - Steve Ells	Letter
316	2	11/15/02	RI/FS PO#9CME0000003 - SEH Invoice #0094032 (Oct Services)	SEH - Gloria Chojnaiki	WDNR - Jamie Dunn	Invoice
318	3	11/18/02	RI/FS Change Order Request #1	SEH - Gloria Chojnaiki	WDNR - Jamie Dunn	Change Order
321	2	11/19/02	Summary of Upland Site Investigation Follow-up Meeting Minutes	Xcel - Dave Donovan	WDNR - Jamie Dunn	Minutes
323	3	11/21/02	DNR's response to Xcel's Draft "Meeting 10/22/02 with EPA Region 5	WDNR - Jamie Dunn	Xcel - Jerry Winslow	Letter
326	6	11/21/02	SEH 10/02 Activities Status Report #2	SEH - Gloria Chojnaiki	WDNR - Jamie Dunn	Status Report
332	1	11/26/02	Pre-QAPP Conference call with USEPA	URS - David Trainor	WDNR - Jamie Dunn	Email
333	2	12/1/02	Xcel faces big bill for WI Cleanup	Star & Tribune	File	News Article
335	4	12/14/02	RI/FS PO#9CME0000003 - SEH Invoice #0095100 (Nov Services)	SEH - Gloria Chojnaiki	WDNR - Jamie Dunn	Invoice
339	6	12/20/02	Status Letter #3 11/02 Activities	SEH - Gloria Chojnaiki	WDNR - Jamie Dunn	Status Ltr
345	1	12/26/02	WDNR request for RI/FS Change Order Request #1	WDNR - Jamie Dunn	WDNR - Jonathan Young Eagle	Memo

Ashland Lakefront Property-BBRT's #02-02-000013						
January 2003 - December 2003						
PG #	# Pgs	Date	Description	Author	Recipient	Item
3	3	1/2/03	Comp FS, RA & add'l Investigation - SEH Invoice #0095284 (Dec Services)	SEH - Gloria Chojnacki	WDNR - Jamie Dunn	Invoice
6	2	1/3/03	Target Analyte Recommendations	Battelle - S Emsbo-Mattingly	SEH - Cy Ingraham	Letter
8	4	1/6/03	1/6/03 Meeting Minutes - Add'l Investigation for all Operable Units		File	Letter
12	1	1/9/03	*Proposed Admin. Order on Consent*	*MF&B - David Crass*	*US EPA - Craig Melodia*	*Letter*
13	5	1/13/03	RI/FS PO#9CME0000003 - SEH Invoice #0095826 (Dec Services)	SEH - Gloria Chojnacki	WDNR - Jamie Dunn	Invoice
18	6	1/13/03	Status Letter #4 12/02 Activities	SEH - Gloria Chojnacki	WDNR - Jamie Dunn	Status Ltr
24	7	1/15/03	Comments on EPA Problem Formulation Spreadsheet	URS - Weldon Bosworth	XCEL - Jerry Winslow	Letter
31	10	1/16/03	AOC Work Plan #1 (Supplemental Site Investigation & Piezometer Install	URS - Dave Trainor	WDNR - Jamie Dunn	Work Plan
41	2	1/16/03	Response Ltr regarding fish consumption from the Chequamegon Bay	*Bad River Band - Ralph Dashner*	*WDHFS - Henry Nehls-Lowe*	Letter
43	1	1/22/03	Problem Formulation Meeting Sign-in sheet		File	Sign-in Sht
44	4	1/27/03	Invoice #9BME0000012 - Forensic Analysis	Battelle - Jane Williams	WDNR - Jamie Dunn	Invoice
48	2	2/3/03	WDNR internal comments/overview of Xcel QAPP	WDNR - Donalea Dinsmore	WDNR - Jamie Dunn	Email
50	9	2/13/03	RI/FS PO#9CME0000003 - SEH Invoice #0097165 (Jan Services)	SEH - Gloria Chojnacki	WDNR - Jamie Dunn	Invoice
59	7	2/19/03	Status Letter #5 1/03 Activities	SEH - Gloria Chojnacki	WDNR - Jamie Dunn	Status Ltr
66	5	2/25/03	Change Order #1 Replacement - RI/FS 9CME0000003	SEH - Gloria Chojnacki	WDNR - Jamie Dunn	CO #1 Replacement
71	1	2/26/03	RI/FS QAPP Review Request Form	EPA - Jon Peterson	EPA - Steve Ostrodka	Form
72	1	3/1/03	RI/FS QAPP Approval for initial revision	EPA - Alida Roberman	EPA - Jon Peterson	Email
73	9	3/2/03	SOW - Limited Investigation Problem Formulation Study Desig Field Verification Work Plan	WDNR - Jamie Dunn	File	SOW
82	3	3/5/03	Fourth Quarter 2002 (Oct - Dec) Quarterly Narrative	WDNR - Dick Kalnicky	US EPA - Suzanne Coll	Quarterly Report
85	3	3/12/03	RI/FS PO#9CME0000003 - SEH Invoice #0098004 (Feb Services)	SEH - Gloria Chojnacki	WDNR - Jamie Dunn	Invoice
88	62	3/13/03	"Strawman" Baseline Problem Formulation	URS - Dave Trainor	XCEL, EPA, WDNR	Report
150	5	3/17/03	Status Letter #6 2/03 Activities	SEH - Gloria Chojnacki	WDNR - Jamie Dunn	Status Ltr
155	1	3/17/03	Change Order #1 Approval - RI/FS 9CME0000003	WDNR - Renee Sanford	SEH - Cy Ingraham	CO Approval Ltr
156	1	3/27/03	Strawman Meeting Sign-in sheet		File	Sign-in Sht
157	13	4/1/03	WDNR Public Outreach SOW	Sig'O - Northland College	WDNR - Jamie Dunn	SOW
170	2	4/2/03	Sediment Guidance Comments	XCEL - Jerry Winslow	US EPA - Leah Evison	Letter
172	3	4/8/03	First Quarter 2003 (Jan - Mar) Narrative	WDNR - Dick Kalnicky	US EPA - Suzanne Coll	Quarterly Report
175	8	4/15/03	RI/FS PO#9CME0000003 - SEH Invoice #0099551 (Mar Services)	SEH - Gloria Chojnacki	WDNR - Jamie Dunn	Invoice
183	5	4/18/03	Status Letter #7 3/03 Activities	SEH - Gloria Chojnacki	WDNR - Jamie Dunn	Status Ltr
188	18	5/13/03	RI/FS PO#9CME0000003 - SEH Invoice #0100434 (Apr Services)	SEH - Gloria Chojnacki	WDNR - Jamie Dunn	Invoice
206	3	5/16/03	Status Letter #8 4/03 Activities	SEH - Gloria Chojnacki	WDNR - Jamie Dunn	Status Ltr
209	1	5/16/03	Ashland Storm Sewer Re-route	WDNR - Jamie Dunn	File	Letter
210	2	5/22/03	WI Central Ltd. Railroad - Proposed Abandonment	WDNR - Bill Gantz	Canadian RR - Michael Barron (Gen. Attorney)	Letter
212	5	6/13/03	RI/FS PO#9CME0000003 - SEH Invoice #0101850 (May Services)	SEH - Gloria Chojnacki	WDNR - Jamie Dunn	Invoice
217	3	6/18/03	Status Letter #9 5/03 Activities	SEH - Gloria Chojnacki	WDNR - Jamie Dunn	Status Ltr
220	10	6/25/03	Limited Investigation, Problem Formulation	WDNR - Dave Behn	SEH - Cy Ingraham	Contract
230	3	7/15/03	Second Quarter 2003 (Apr - Jun) Narrative	WDNR - Dick Kalnicky	US EPA - Suzanne Coll	Quarterly Report
233	6	7/16/03	RI/FS PO#9CME0000003 - SEH Invoice #0103221 (Jun Services)	SEH - Gloria Chojnacki	WDNR - Jamie Dunn	Invoice
239	3	7/22/03	Status Letter #10 6/03 Activities	SEH - Gloria Chojnacki	WDNR - Jamie Dunn	Status Ltr
242	2	7/23/03	City Council Meeting Comment Letter	XCEL - Michael BeBeau	Ashland City Council	Letter
244	13	7/26/03	Response Ltr regarding Xcel's City Council Meeting Comments	Ashland City Mayor - Fred Schnook	Ashland City Councilors	Letter
257	2	8/5/03	Cooperative Agreement Amendment #2 - RI/FS Phase	State Secretary - Scott Hassett	USEPA - Patricia Thompson, Chief	Form
259	6	8/13/03	Limited Investigation PO#9CME0000036 - SEH Invoice #0104287 (Jul Services)	SEH - Gloria Chojnacki	WDNR - Jamie Dunn	Invoice
265	3	8/19/03	Status Letter #1 7/03 Activities under WDNR PO# 9CME0000036.	SEH - Gloria Chojnacki	WDNR - Jamie Dunn	Status Ltr
268	2	8/20/03	Request to keep WDNR Lead Agency	Ashland City Mayor - Fred Schnook	Govenor - James Doyle	Letter

270	6	8/28/03	EPA Comments on Draft Problem Formulation	USEPA - Brenda Jones	WDNR - Jamie Dunn	Letter
276	6	9/3/03	URS's Analytical Report for Stockpile Soil Samples	URS - Ben Nelson	WDNR - Jamie Dunn	Report Letter
282	68	9/4/03	Ashland's DNR Oversite update to Ashland City Council	Ashland City Mayor - Fred Schnook	Ashland City Council	Letter w/Attachments
350	2	9/5/03	Meeting Agenda for Sept. 8th,9th & 10th for EPA oversight options with stakeholders.	WDNR - John Robinson	Ashland Stakeholders	Email
352	1	9/25/03	Mini - QAPP Conditional Approval	USEPA - Sharon Jaffess	Xcel, URS, WDNR	Email
353	5	10/3/03	URS's Final Analytical Report for Stockpile Soil Samples	URS - Ben Nelson	WDNR - Jamie Dunn	Report Letter
358	11	10/6/03	Public Record Request - Grosjean v. NSP	WDOJ - Deb Johnson	MBF Attorney - David Crass	Letter w/Attachments
369	1	10/9/03	Revised AOC and SOW	USEPA - Wendy Carney	MBF Attorney - David Crass	Facsimile
370	6	10/9/03	Limited Investigation PO#9CME0000036 - SEH Invoice #0105982 (Aug-Sept Services)	SEH - Gloria Chojnacki	WDNR - Jamie Dunn	Invoice
376	3	10/24/03	Status Letter #2 08-09/2003 Activities under WDNR PO# 9CME0000036.	SEH - Gloria Chojnacki	WDNR - Jamie Dunn	Status Ltr
379	3	10/28/03	Third Quarter 2003 (July - Sept) Quarterly Narrative	WDNR - Dick Kalnicky	US EPA - Suzanne Coll	Quarterly Report
382	2	10/29/03	RI/FS PO#9CME0000003 - SEH Invoice #0107047 (Mar Services)	SEH - Gloria Chojnacki	WDNR - Jamie Dunn	Invoice - add'l service's
384	9	11/12/03	Reuse of Former Waste Water Treatment Plant	WDHFS - Henry Nehls-Lowe	File	Report
393	7	11/19/03	Pipe Observation/Excavation PO#NKD000001555 - SEH Invoice #0108178 (Oct Services)	SEH - Gloria Chojnacki	WDNR - Jamie Dunn	Invoice w/file
400	2	11/20/03	1st Contingency Fee Request - Limited Investigation PO #9CME0000036	SEH - Gloria Chojnacki	WDNR - Jamie Dunn	Add'l Fee Request
402	1	12/1/03	WDNR contingency request for finance on 2 tasks of the RI/FS Work Plan contract	WDNR - Jamie Dunn	WDNR - Jonathon Young Eagle	Memo
403	1	12/9/03	State Funded Response Cost Recovery	WDNR - Jamie Dunn	WDNR - Staff	Memo
404	1	12/10/03	Extension request for Superfund Cooperative Agreement #V975604-01	WDNR - Secretary Scott Hassett	USEPA - Thomas Skinner - Regional Admin.	Extension Request Ltr
405	19	12/15/03	Technical Letter Report - Comparison of URS and SEH Work Plans	XCEL - Jerry Winslow	WDNR - Jamie Dunn	Report Letter
424	1	12/16/03	2nd Contingency Fee Request - Limited Investigation PO #9CME0000036	SEH - Gloria Chojnacki	WDNR - Jamie Dunn	Add'l Fee Request